ELITE

Projection TV Training Guide

PRO-530HD/PRO630HD/PRO730HD

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Pioneer
sound. vision. soul

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!

This manual is intended for qualified service technicians ; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 - Proposition 65

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols ▪━━━▯ (fast operating fuse) and/or ▪━━━▨ (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible ▪━━━▯ (fusible de type rapide) et/ou ▪━━━▨ (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

1. SAFETY PRECAUTIONS

NOTICE : Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis or picture tube.

The following precautions should be observed :

1. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn.
   People not so equipped should be kept away while picture tubes are handled.
   Keep picture tube away from the while handling.
2. When service is required, even though the HDTV PROJECTION MONITOR an isolation transformer should be inserted between power line and the set in safety before any service is performed.
3. When replacing a chassis in the set, all the protective devices must be put back in place, such as barriers, nonmetallic knobs, adjustment and compartment covershields, isolation resistor-capacitor, etc.
4. When service is required, observe the original lead dress. Extra precaution should be taken to assure correct lead dress in the high voltage circuitry area.
5. Always use the manufacture's replacement components. Especially critical components as indicated on the circuit diagram should not be replaced by other manufacture's. Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.

6. Before returning a serviced set to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the set by the manufacture has become defective, or inadvertently defeated during servicing.
   Therefore, the following checks should be performed for the continued protection of the customer and service technician.

Leakage Current Cold Check

With the AC plug removed from the 120V AC 60Hz source, place a jumper across the two plug prongs. Turn the AC power switch on. Using an insulation tester (DC 500V), connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (input/output terminals, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis should have a minimum resistor reading of 0.3MΩ and a maximum resistor reading of 5MΩ. Any resistor value below or above this range indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

Leakage Current Hot Check

Plug the AC line cord directly into a 120V AC 60Hz outlet (do not use an isolation transformer for this check). Turn the AC power switch on.

Using a "Leakage Current Tester (Simpson Model 229 equivalent)", measure for current from all exposed metal parts of the cabinet (input/output terminals, screwheads, metal overlays, control shaft, etc.), particularly any exposed metal part having a return path to the chassis, to a known earth ground (water pipe, conduit, etc.). Any current measured must not exceed 0.5mA.
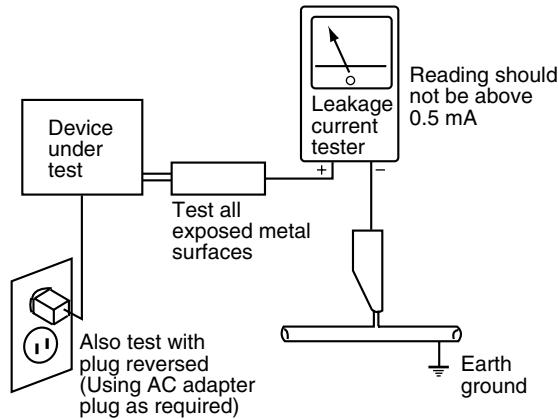
AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE SET TO THE CUSTOMER.

High Voltage

This set is provided with a X-ray protection for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this X-ray protection may correctly be operated.

Serviceman Warning

In the status of the black picture (video muting is being applied) when no signal is input, high voltage of this set during operation is less than 30.5kV. In case any component having some relation to the high voltage is replaced, confirm that the high voltage is lower than 30.5kV in the status of the black picture when no signal is input.

To measure H. V. use a high impedance H. V. meter.

Connect (–) to earth and (+) to the FBT anode cable connector.

(Refer to section "7.1.2 DISASSEMBLY".)

X-radiation

TUBE : The primary source of X-radiation in this set is the picture tube.

For continued X-radiation protection, the replacement tube must be the same type as the original, PIONEER approved type.

The picture tube (CRT Service Assy R, G, B) used in this set holds complete guarantee against X-ray radiation when the X-ray is sealed (next page). Accordingly, when the current in flowing to the picture tube (CRT Service Assy R, G, B), be sure to perform it by putting the tube into X-ray sealed applied state. Avoid absolutely to flow the current to the picture tube (CRT Service Assy R, G, B) itself. Moreover, when the voltage of the high voltage circuit becomes abnormally a little higher, the picture tube radiates X-rays. Accordingly, when servicing the high voltage circuit be sure to replace as an assy with the POWER SUPPLY Assy in the manner in which has been adjusted to perform normal operation.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in PIONEER set have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual. Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, X-radiation, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

4.

Features

Progressive Scan/HDTV monitor

All SDTV and HDTV signals are converted to 1080i and displayed at high resolution.

DVI (Digital Visual Interface) with Copy Protection system

The combination of Digital Visual Interface (DVI) and High-bandwidth Digital Content Protection (HDCP) is important for viewing copy-protected digital contents through SAT/CATV BOX or DVD player. DIGITAL input terminal receives the signal in the form of digital information. In this way, all signals coming into this interface have a very high resolution and less noise compared to an analog interface.

Dual System Component Input for NTSC/ Progressive

Connection to a DVD player using the component output terminals makes possible a high picture-quality display, superior to that of a S-VIDEO terminal connection. This also handles high resolution component input (1080i, 480p), which will function as an interface for high-quality images in future.

Dual Tuner (Split Screen and CH Search screen function)

Two TV tuners are provided, making it possible to split the screen vertically in two areas in order to display moving images simultaneously on each of them. In addition, the channel search function makes it possible to check and perform other functions etc., on the program that you choose to run in the background, while viewing the foreground program. This adds remarkable convenience when you are concerned with viewing two programs.

Pioneer PureCinema III Format Converter

An advanced and exclusive I/P (Interlace/Progressive) third generation format converter called "PureCinema III", delivers a high-resolution progressive picture (480p) or Interlaced picture(1080i). *This is USER SELECTABLE

It reproduces film material in a very smooth and film-like image. This is perfect technology for movie lovers.

Anti-Reflective Tinted Protection Panel

The accompanying protective panel is AR (Anti-Reflective) coated and tinted.

This is not only to protect the screen, but to present a more natural and high contrast image with less light reflection. This AR coating is very durable against scratching.

Lens System for HDTV

The adoption of a specialized lens system for high-resolution HDTV which faithfully reproduces HDTV 1080i signals allows for highly color-saturated images to be displayed at high resolution. Also, by incorporating an "achromatic coated" lens for the blue CRT, the picture image is reproduced with less halo and appears sharp.

Reference Theater mode and PRO mode

\<Reference Theater Mode\>

This mode reproduce film material just like a real film image. By cutting video enhancement circuits, the picture becomes more natural and looks film-like.

\<PRO Mode\>

This mode offers pro level video adjustment to the user. You can go into several areas such as: LTI (Luminance Transient Improvement), Gamma, White Balance.

Fully Illuminated Remote Control Unit

A fully illuminated universal remote control is used that makes it possible to operate other devices. Remote operations can thus be performed easily even in dark rooms and similar environments.

Multi-Point Convergence System

Convergence of the red, green, blue guns* in the TV is critical to a good picture. Thanks to new convergence system digital technology, not only can the center of the screen be adjusted, so can an amazing 72 other points across the entire viewing area. This ensures color accuracy throughout the screen. The adjustment is easily done from the remote control. (*guns = cathode ray tubes)

Room Light Sensor (RLS)

When you select RLS "on" (LEVEL1, LEVEL2), in accordance with the ambient light of your room, the TV automatically adjusts the picture brightness to reduce eye strain.

Program Block (V-CHIP)

You can block selected programs based on the established rating system for television programs and movies. The rating systems are defined below:

\<U.S.A. RATING SYSTEM\>

The TV parental Guidelines are used to rate television programming: \<TV-Y\>, \<TV-Y7\>, \<TV-G\>, \<TV-PG\>, \<TV-14\> and \<TV-MA\>.

The Motion Picture Association of America(MPAA) guidelines are used to rate movies: \<G\>, \<PG\>, \<PG-13\>, \<R\>, \<NC-17\>, \<X\> and \<NR\>.

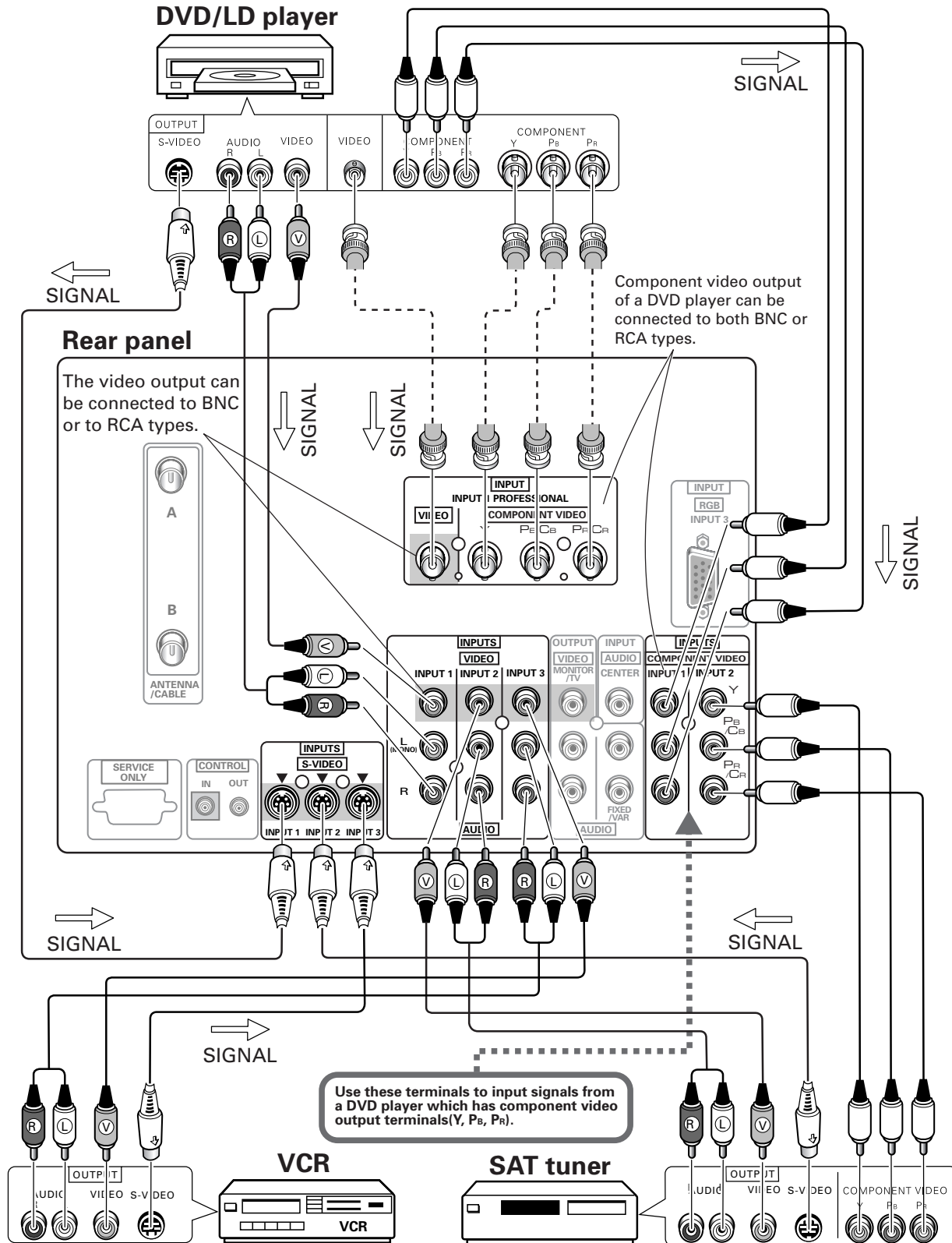### \<CANADIAN RATING SYSTEM\>

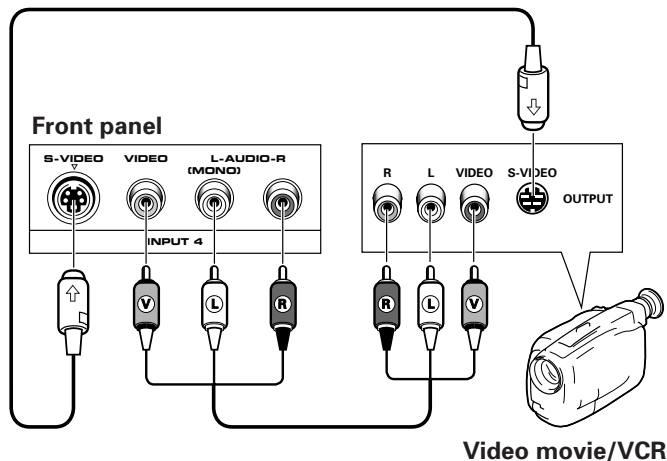The Canadian English Language Rating System is used to rate television programming: \<C\>, \<C8+\>, \<G\>, \<PG\>, \<14+\> and \<18+\>. The Canadian French Language Rating system is used to rate

Connections

DVD/LD player

SIGNAL

OUTPUT				VIDEO	COMPONENT		COMPONENT		
S-VIDEO	AUDIO R L	VIDEO			PB PR		Y PB PR		

R L V

SIGNAL

Component video output of a DVD player can be connected to both BNC or RCA types.

Rear panel

The video output can be connected to BNC or to RCA types.

SIGNAL SIGNAL SIGNAL

A

B

ANTENNA /CABLE

INPUT	
INPUT PROFESSIONAL	
VIDEO	**COMPONENT VIDEO**
	Y PB CB PR CR

INPUT
RGB
INPUT 3

INPUTS		
VIDEO		
INPUT 1	INPUT 2	INPUT 3
L (MONO)		
R		

OUTPUT	INPUT
VIDEO MONITOR /TV	AUDIO CENTER
	FIXED /VAR

INPUTS	
COMPONENT VIDEO	
INPUT 1 INPUT 2	
	Y
	PB /CB
	PR /CR

SERVICE ONLY

CONTROL	
IN	OUT

INPUTS		
S-VIDEO		
INPUT 1	INPUT 2	INPUT 3

AUDIO **AUDIO**

V L R R L V

SIGNAL SIGNAL

SIGNAL

Use these terminals to input signals from a DVD player which has component video output terminals(Y, PB, PR).

R L V

VCR

OUTPUT		
AUDIO R L	VIDEO	S-VIDEO

VCR

R L V

SAT tuner

OUTPUT			COMPONENT VIDEO		
AUDIO R L	VIDEO	S-VIDEO	Y	PB	PR

6.

Connections Front & RGB

Front panel

Video movie/VCR

INPUT jacks

The monitor is equipped with input jacks 1 to 6.
Refer to the following explanation for information about each jack.

COMPOSITE VIDEO INPUT jacks

There are 4 sets of inputs for VCR and DVD/LD players. Use RCA-type pin plug cords (the same as those used in Hi-Fi systems) for connections. When the audio source to be connected is mono, connect the source to the L-(MONO) jack.
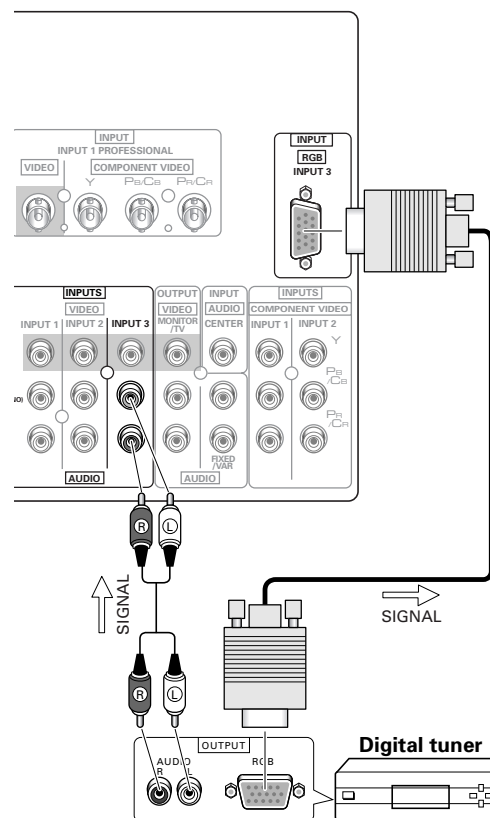
S-VIDEO INPUT jacks

- Inputs signals from a DVD/LD player that has an S-VIDEO output jack.
- When the signal input from the S-VIDEO INPUT jack is output from the MONITOR/TV OUTPUT jack, the output signal will be a composite of Y and C.

COMPONENT VIDEO INPUT jack

Inputs three signals – Y, P_B/ C_B and P_R/ C_R – output from DVD players and the like.

Input formats in which images can be received.

	Format	Horizontal frequency	Vertical frequency
DVD player, etc.	480 i	15.734 kHz	60 Hz
	480 p	31.468 kHz	60 Hz
Digital tuner, etc.	720 p	45.00 kHz	60 Hz
	1080 i	33.75 kHz	60 Hz
	480 p	31.468 kHz	60 Hz

RGB INPUT jack

Inputs five signals – R, G, B, H and V – output from digital tuners and the like.

Input format in which images can be received.

	Format	Horizontal frequency	Vertical frequency
Digital tuner	1080 i	33.75 kHz	60 Hz

NOTES:
- *SPLIT screen, FREEZE screen and SEARCH screen functions cannot be used when 1080i or 720p component signals are input.*
- *Signals from MONITOR/TV OUTPUT jacks will not be output when component signals or RGB signals are input.*
- *The RGB input jack is designed for use in connecting a digital tuner with RGB signal output, and it should accordingly never be used for connecting to a personal computer or other device.*

Digital tuner

NOTE:
When the 3 signals, RGB signal, composite signal, and S signal, are simultaneously input to INPUT 3, the RGB signal will be displayed on screen.

DVI Connections

**DVD player**   **Digital tuner**
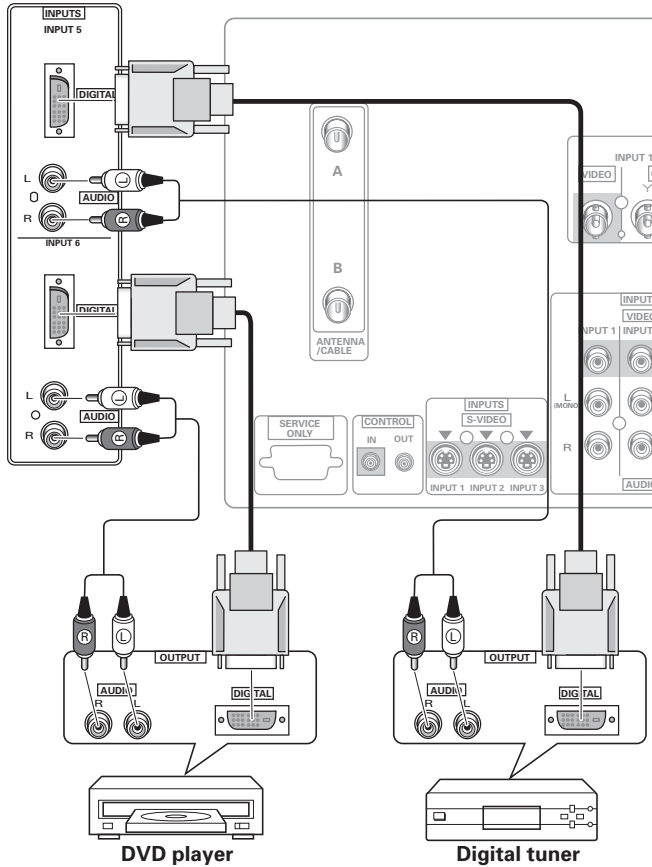
MONITOR/TV OUTPUT jacks

These are used for connecting the monitor to a VCR for recording, or for linking it to another monitor. These jacks output the video and audio signals of the source currently selected by the INPUT SELECT. Connect these output jacks to your VCR's inputs. Connect the VCR's outputs to the monitor's VIDEO inputs.

When the system connection is ON, the jack is TV OUTPUT (refer to page 75).

DIGITAL INPUT jacks

This jack is used to connect devices with digital video output (digital set top box, DVD player, etc.) compatible with HDCP. Before attempting to connect one of these devices, read its operating instructions to make sure that it can be connected. (HDCP = High-bandwidth Digital Content Protection)
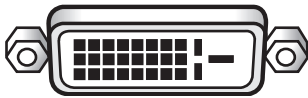
NOTES:
- *This jack is used only for 1080i and 480p video signals.*
- *It is not a jack intended to be used with a personal computer.*
- *Use a DVI 25 pin cable (available on the market) as the connecting cable.*

Remote Control
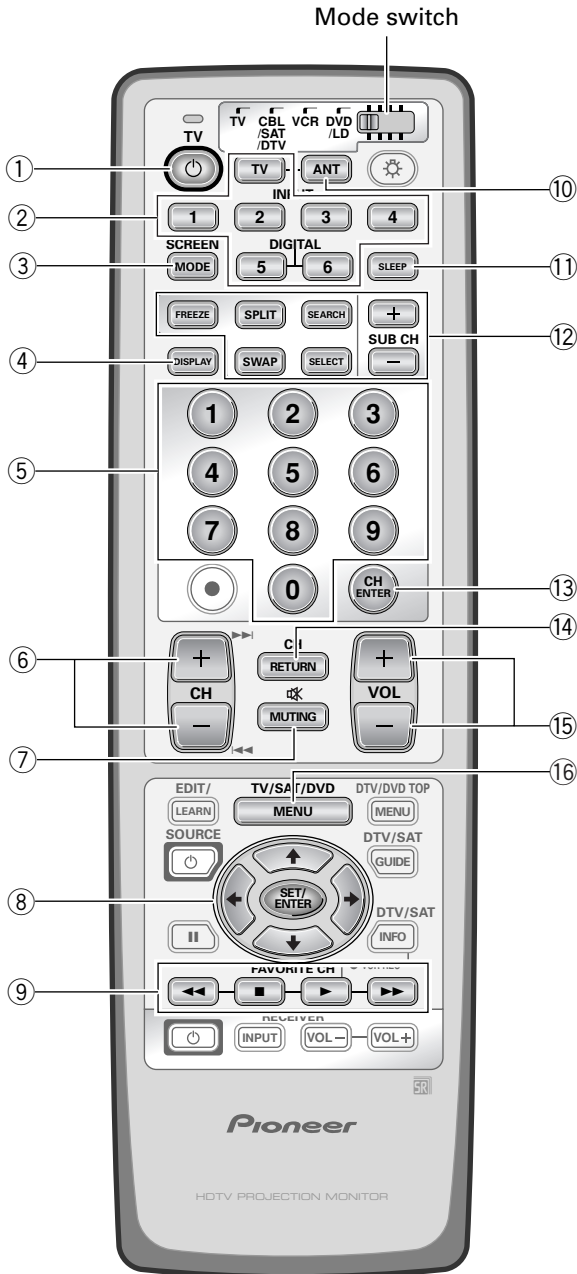
Mode switch

Set the mode switch to TV.

① ⏻ **TV Power button (STANDBY/ON)**
Turns the power of the monitor on and off.

② **INPUT Selector buttons (TV, INPUT 1 to INPUT 6)**
Press the button to select the source you wish to watch.
The screen will display your selection.

③ **SCREEN MODE button**
Press to select the SCREEN MODE. (Refer to page 41.)

④ **DISPLAY button**
Press to display the input source, channel, setting and other
screen indicators for a few seconds.

⑤ **Direct channel selection buttons**
Press the button (or buttons) that corresponds to the
channel that you wish to watch.

⑥ **CH (channel) +, – button**
Press plus (+) or minus (–) to tune in a higher or lower
channel. Only the preset channels can be tuned in using
these buttons.

⑦ **MUTING button**
Press to temporarily turn off the sound. Press again to return
to the previous volume level.

⑧ **Select/Adjust/Set buttons (SET/ENTER, ←, →, ↑, ↓)**
←, →, ↑, ↓: Press to select or adjust items on the menu
screen.
SET/ENTER: Press to activate the selected function.

⑨ **FAVORITE CH buttons**
These buttons call up the channels that have been assigned
to them.

⑩ **ANT (antenna selector) button**
Press to switch between ANTENNA-A and ANTENNA-B
when you wish to watch TV.
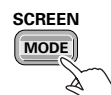
Screen Modes
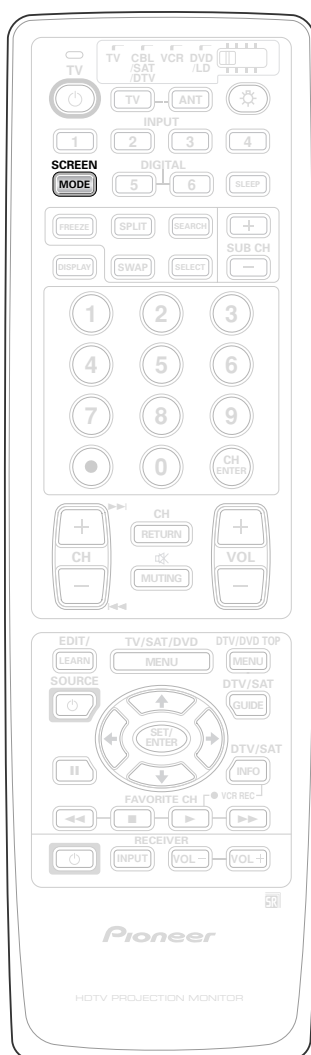
SETTING SCREEN MODE

Different source material have specific screen modes they should use. Some films are mode in <u>Vista</u> some in <u>cinemascope</u> etc. check video/DVD packaging for info. Regular TV program are 4:3, so 4:3 is the standard mode.

- This Monitor is provided with modes to deal with screens of various aspect ratios. It is recommended that programs and software be watched in the appropriate mode.
- When 4:3 images are fully displayed on a wide TV screen in the NATURAL WIDE mode, CINEMA WIDE mode, ZOOM mode, or FULL mode, some parts of the images may be cut off or distorted.
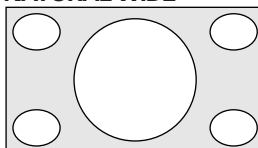
Press the SCREEN MODE button.

- Each time the SCREEN MODE button is pressed, the mode changes in the following order.

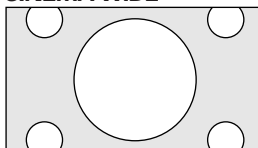NATURAL WIDE ⟶ CINEMA WIDE ⟶ ZOOM ⟶ FULL ⟶ 4:3 NORMAL ⟶ (back to NATURAL WIDE)

NATURAL WIDE

Suitable for when viewing regular TV news or sports programs. Movies or sports programs can be viewed with an expansive powerful image.
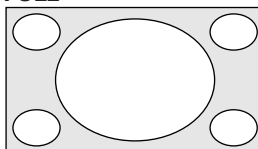
CINEMA WIDE

Mainly suitable for viewing Vista size and other such movie images.
Provides a more expansive, powerful image. This screen size is convenient when viewing a Cinemascope size image that has subtitles.

ZOOM
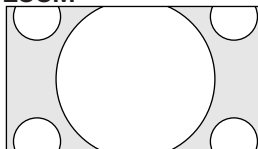
Mainly suitable for viewing Cinemascope size and other such movie images.
Provides a more expansive, powerful image.

FULL

Suitable for wide screen images.

4:3 NORMAL
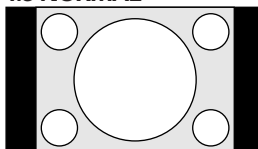
Suitable for when viewing news sit coms or any regular TV programs. Video software can be viewed in its original screen frame size with this mode.

NOTES:
- When 1080i, 720p component signals or RGB signals, 1080i DIGITAL signals are input, SCREEN MODE will be limited to FULL.
- In PURE DIGITAL: ON state during digital signal input (INPUT 5,6), SCREEN MODE is fixed at FULL.
- Continuous operation for extended periods in 4:3 NORMAL mode may burn out the screen. We thus recommend that this mode be used only in conjunction with another SCREEN mode.

10.
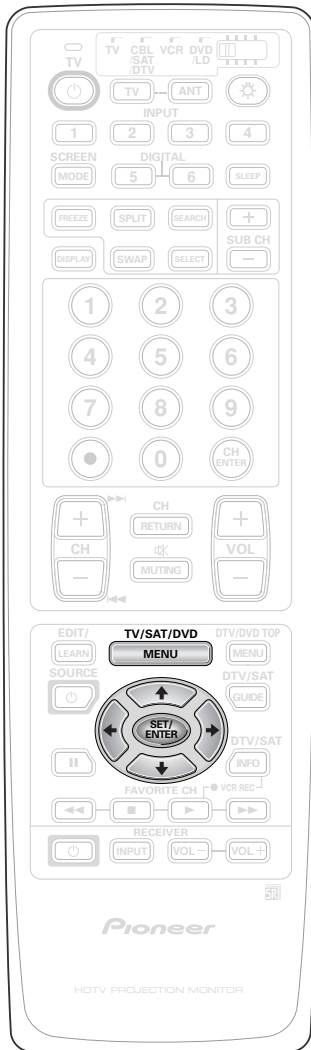
Scan Modes

This function switches the display on the screen between 480p (progressive scan) and 1080i (interlace scan) during 480i and 480p.

1 **Press MENU and select SCREEN by using the ← or → button and then pressing ↓ button. (Refer to page 26.)**

2 **Select SCAN MODE .**

```
SCREEN
INPUT3
●SCAN MODE:    1080i
 H.POSITION:      0
NATURAL WIDE
 V.POSITION:      0

    --- SELECT    SET --- SET    MENU --- END
```

3 **Change SCAN MODE.**

```
●SCAN MODE:    1080i 480p
        --- ADJUST   SET ---SET   MENU ---END
```
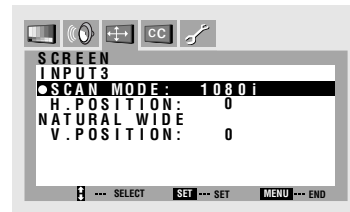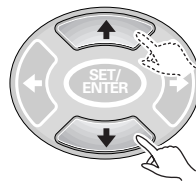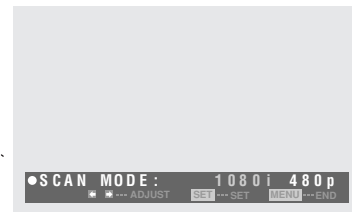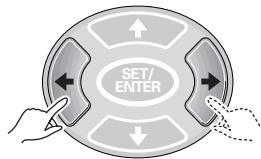
1080i .... This is optimum for viewing moving video.
480p .... This is optimum for viewing still pictures or text.

4 **After adjusting, press MENU to turn the menu off.**

TV/SAT/DVD
MENU

NOTE:
This function cannot be used during "INPUT1, 2 component 1080i, 720p," "INPUT3 RGB Signals," "INPUT 5, 6 Digital Signals 1080i," and "PURE DIGITAL ON."

Power Management

POWER MANAGEMENT

This function automatically turns on power management mode if no digital signal is input when digital signal input is selected.
When digital signal input restarts, power management mode is cancelled.

1 Press MENU and select SETUP by using the ← or → button and then pressing ↓ button. (Refer to page 26.)

2 Select DIGITAL INTERFACE.

```
SET UP
  CHANNEL SET UP
  CONVERGENCE
  PROGRAM BLOCK
  CHANGE PASSWORD
  SYSTEM IN/OUT
  RLS:OFF
●DIGITAL INTERFACE

--- SELECT    SET --- SET    MENU --- END
```

3 Select POWER MANAGEMENT.

```
DIGITAL INTERFACE
  PURE DIGITAL:        ON
●POWER MANAGEMENT:OFF




  EXIT
--- SELECT    SET --- SET    MENU --- END
```

4 Set POWER MANAGEMENT to ON.

```
DIGITAL INTERFACE
  PURE DIGITAL:        ON
●POWER MANAGEMENT:ON OFF




  EXIT
--- SELECT    SET --- SET    MENU --- END
```
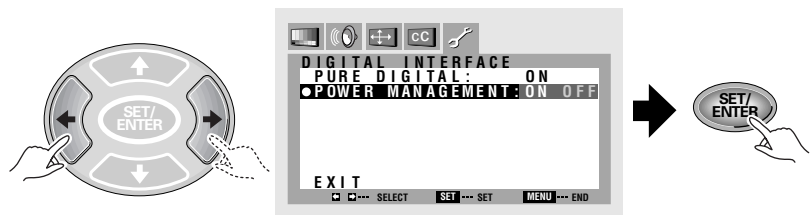
ON .... Turns on power management mode
OFF .... Turns off power management mode.

5 After setting, press MENU to turn the menu off.

TV/SAT/DVD
MENU

NOTES:
- It can be used only during digital signal input (INPUT 5, 6).
- When power management mode is operating, the POWER STANDBY indicator (green) flashes.
  At this time, power management mode can be shut off to operate the monitor by pushing either the INPUT SELECT, or MENU button on the front panel or on the remote control. Pushing the POWER button sets it in standby status.

Control panel of the monitor

STANDBY ON

ROOM LIGHT SENSOR

PCB BLOCK

REAR VIEW

Copy Protect Detection Switch

DVI Input 5

DVI Input 6

Caution:
Switch must be closed
for set to operate

DIGITAL INPUT Copy Protection

The DVI module on this model utilizes DIGITAL INPUT COPY PROTECTION (DVI Ver1.0 with HDCP).
The High Band Digital Content Protection System will activate when it detects one of the actions below has occurred.
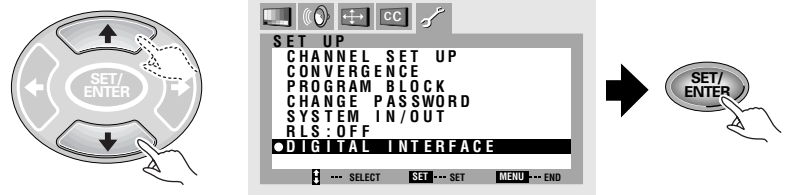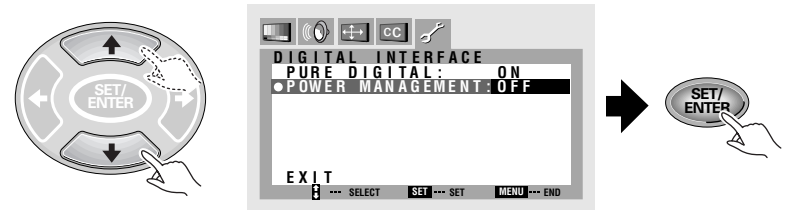
1. If you turn on the power with the rear cover removed.
2. If you remove the cover while the set is on.
3. If you turn on the power with the lead wire cable disconnected to the DVI Assy.
4. If you turn on the power with the DVI Shield Case removed.

When the protection function activates, main power SW is the state of ON, and standby LED (red) flashes.
(repeat flashing :250ms on and 250ms off)
When in protection mode, the set will not operate until protection mode has been released.

• Release method is as follows
1. Press the "RETURN" key on the front panel more than five seconds, or until the standby LED lights constanty.
2. Press the "POWER" key → "RETURN" key → "INPUT/SET" key in order within five seconds after standby LED lighted.
3. Press the "POWER" key, and turn on the product.
4. If you were not able to press the keys within five seconds in step 2 operation or mistook key operation, repeat steps 1 and 2. As the set has entered the protection mode again.
5. When confirming a problem with the product, enter the test mode temporarily so that the protection function does not activate again.
   Press the FACTORY key on the Front Panel twice, and enter the 2nd FACTORY mode. Press "48" key with the remote control unit, and enter the TEST mode. (display "TEST MODE" on the screen, and it should release the protect mode.)
6. After work completion, return the product to the original state. Enter the 2nd FACTORY mode, and release the test mode by pressing the "47" key.

• Flashing of The Power LED

1. Specification of red LED
   • Standby
     lighting
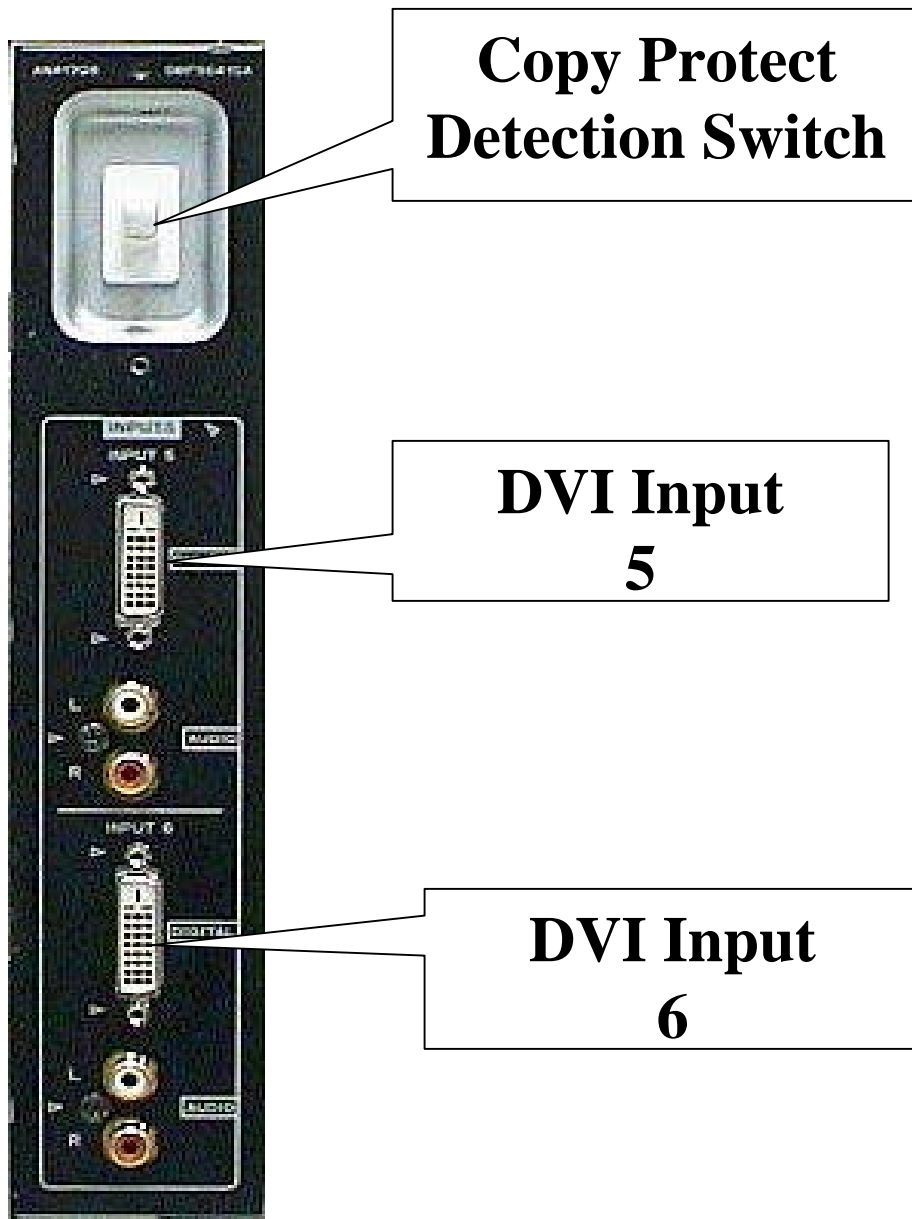   • After having shifted from power management operation to normal standby (operation released the power management by turning the power off), continue lighting after flashing three times: Repeat 500ms off and 500ms on three times, and continue lighting.

   • During copy protection operation
     Flashing: Repeat 250ms on and 250ms off.

   • Relay welding
     Repeat three times flashing and once stop: Repeat 100ms on ,100ms off ,100ms on ,100ms off ,100ms on ,100ms off and 1S off.

2. Specification of green LED
   • Power on
     lighting
   • During power-saving mode operation (power management)
     Flashing: Repeat 2s on and 2s off.

About power management:
When input signal disappears only at INPUT 5 or 6, it enters the power-saving mode.

Tuner,Video and "S" input Block Diagram (Main and Sub-Picture)

17.

Tuner & Video Inputs	Y Inputs	C Inputs	Sub-Picture

I/P Converter & Twin Picture Processor

IC2807 TA74ACT04 — INVERTER

PROGRESSIVE UNIT AXY1061

PLL · UCOM · AD · IP CONVERTER TWIN PICTURE · RESIZE · DA · AD · PLL · SDRAM · 3DNR

MH · MV · MY MCB MCR · MMUTE · SMUTE · SY SCB SCR · SV · SH · KMASK · DVS · DHS · DY DCB DCR

SVM · SCL2 SDA2 · V MUTE

CRT AMP · SCREEN · FOCUS · ANODE · FOCUS PACK · DYNAMIC FOCUS · D.F · HOUT · HIGH VOLTAGE OUT · H.V. CR BLOCK · +B ANODE · PD · F.B. · H.V. CONTROL · HVRST · CPURST · ABL · H.DEF DRV · HDRV · H.BLK GEN. · H.DEF OUT · FP · +B · P.D. · H.DEF CONTROL · HPIN · HSIZE

TY TCB TCR · DY DCB DCR · IC4305 M52055FP · COMP FULL · HBLK 1 · VM

YCBCR · IC4301 AN5395FBP · SHARP-NESS · DCLP · CP GEN. · SCP · HBLK1 GEN. · KMASK · MASK GEN. · IPHBLK

IC4606 CXA2153S · ABL ACL · RGB ENCODER · HBLK 1

IC4306 M52055FP · 31KSW · SHARP-NESS DETAIL · SHARP SW · SPASS · YCBCR

IC4608 CXA2180Q · BLACK LEVEL COMPENSATION · VM · ABL · LTI · CTI · RGB MATRIX · RGB MIX · DRIVE · R · G · B · γ COMPENSATION · R · G · B · LIN WHITE · OSD SW · CUTOFF · SCL2 SDA2 · OSDRGB · OSDBLK · ABL

I2C INTERFACE · SCL2 SDA2 31K/33K PURE RGB STDSW

PGAIN PBRT · DY · APL DET

SYNC PROCESS AFC · HPIN · HBLK · HDRV · VDRV± · VBLK · PD · P.D. · VDRV± · PRE. AMP · V.DEF · AMP

IC4601 M52055FP · RGB APL · APL · RGB · PURE RGB · COMP FULL · H · DHS · HS · IC4610 TC74HC126AF · DVS · V · VS · IC4610 TC74HC126AF

HS VS

IC4602 TC74HC4053AF · OSDRGB · CVRGB · OSDRGB/CVRGB · OSDBLK · OSDBLK · CVBLK

IC1204 CM0022AF · HBLK · VBLK · LPF · IC1205 CD0031AM · IC401, IC402 STK392-180 · SCL2 SDA2 CBUSY WP CRESET · DIGITAL CONVERGENCE · PLL · 6ch DAC IC · LPF · AMP · MUTE · CMUTE

EEP ROM · IC1203 24LC64(I)P · CVRGB CVBLK

Cross Hatch

Convergence Data

18.

Component input Block Diagram (Main and Sub-Picture)

19.

Main Picture

Sub-Picture

Sync

DVI & RGB input Block Diagram (Main and Sub-Picture)

Main & DVI

Sub-Picture (DVI)

RGB 1080I 33K

Sync

22.

Audio Block

ANT A

ANT B

FE2

FE1

SCL1,SDA1,AFT1

AV SW
IC2201 CXA2069Q

TV1 L,R

-6dB

ATT

ATT

+6dB

AMP

INPUT1 L,R

INPUT 1   L   R

ATT

INPUT2 L,R

INPUT 2   L   R

ATT

INPUT3 L,R

INPUT 3   L   R

ATT

INPUTF L,R

INPUT F   L   R

ATT

ATT

INPUT 5   L
INPUT 6   R

INPUT5,6
DVI L,R

MONITOR/TV
OUT

AMP

AUDIO
OUT

VAR/FIX
MUTE

VAR/FIX
SW

FIX L,R

AUDIO OUT   L   R

VAR/FIX MUTE

IC2203
MC14066BF

VAR L,R

CENTER IN

MONITOR/
TV OUT   L   R

MONITOR MUTE

MON/TV
MUTE

(Video U-Com PCB)

Audio Inputs (Ant A or B ,and inputs 1 ~ 6)

Audio outputs (fixed & variable)

Center channel input

23.

See Explanation Page 28

(Video U-Com PCB)

L,R/CENTER
IC2202
MC14066BF

L,R

CENTER

CENTER
SW

IC5502
BH3865S

PRE AMP

ATT

AGC

FRONT
SURROUND

TONE
CONTROL
BASS BOOST

VOL CONTROL
AUDIO MUTE

SCL2
SDA2

AMUTE2

IC5501
NJM4558MD

AMP

IC5503
IC5504
NJM4558MD

TRAP

ATT

AUDIO
MUTE

AMP

PHASE
SECURITY

DC
DETECTION

SPEAKER

IC1101 LA4282
POWER AMP

AMUTE

CMUTE
AMUTE2

(Power Supply PCB)

24.

Tuner, Video and "S" Input Block Explanation
(See Pages 17 and 18)

Main Picture (Tuner or Composite)
Input switch (IC2201) receives signals from the tuner, inputs 1 ~ 3 and the front input (input F). Signals from the tuner or composite signals from inputs 1,2,3 or F enter IC2201 and the user selected output for the main picture goes to IC2503. IC2503 is a 3D Y/C separator for the main picture composite signals. After the composite signals have been changed to 3D-Y/C signals they enter IC2803 and the color demodulator inside this IC changes the signals to Y/CB/CR. IC2803 also separates the horizontal and vertical sync. All signals at this point are sent onto the progressive unit for I/P conversion. All signals entering the progressive unit are converted to 480P at 31K or 1080I at 33K (user selectable). Signals entering the progressive unit are converted to digital and resized for the user selected screen mode and scan mode. The output signals from the progressive unit are converted back to analog and the Y/CB/CR signals pass through switch IC4305 and go into the sharpness and detail correction IC (IC4301) or bypass IC4301 through switch IC4306 and enter IC4608. All picture, color correction and sync processing is done inside IC4608. The output processed RGB signal from IC4608 is sent to the CRT drive PCB's.

Main Picture ("S")
Inputs from the "S" connectors (inputs 1,2,3 and F) are user selected by IC2201 and outputted to IC2503 as Y and C signals. Since these signals are already separated IC2503 simply passes the signals through onto IC2803. From this point the signal path is exactly the same as (Tuner or Composite).

Sub Picture (Tuner, Composite or "S")
The sub picture path is used for the twin picture function and the multi picture tuner scan feature. Any signal input into IC2201 can be used for the sub picture output. The user selected sub picture output from IC2201 goes to IC2701 for Y/C separation if the signal is Tuner or Composite. If the signal is of the "S" type it simply is passed through IC2201 and enters IC2806 for color demodulation and sync separation. The outputted Y/CB/CR and sync signals are then sent to the progressive unit for twin picture or multi picture processing.

25.

Component Input Block Explanation
(See Pages 19 and 20)

Main Picture (Input 1 or 2 Component 480I 15K, 480P 31K and 720P 45K)

IC3901 is used as the input 1 and 2 main picture selector and if the input is 480I, 480P or 720P the user selected signals pass through IC3901 and enter IC2803. The Y/CB/CR signals bypass the color demodulator and go directly to the progressive unit. The sync signals are separated by IC3901 and pass through IC2803 and onto the progressive unit for processing. 15K sync signals entering the progressive unit are doubled, 31K pass though and 45K signals are converted to 31K and outputted to IC4608 for final processing.

Sub Picture (Input 1 or 2 Component 480I or 480P)

Component inputs 1 or 2 can be used for the sub picture (twin picture) function as long as the signals are 480I or 480P and full mode has not been selected. Note: 720P cannot be used as a sub picture source. 720P defaults to full screen mode only. IC3906 is the input user selector switch for the sub picture from component inputs 1 or 2. The selected Y/CB/CR signals along with the separated sync signals go to IC2806. The Y/CB/CR and separate sync signals pass through IC2806 and go onto the progressive unit for twin picture and sync processing.

Main Picture (1080I 33K and 480P Full-Mode)

IC3901 (the main picture component output selector) user selects input 1 or 2 and outputs the Y/CB/CR signals in 1080I or 480P full-mode format and sends the signals to IC4305 (the full component switch). From IC4305 the signal directly enters IC4606 for picture, color and RGB processing. The separated 31k or 33K sync signals from IC3901 also go directly to IC4606 after passing through switch IC4610 for sync processing. 480P full-mode requires no size conversion from the I/P converter inside the progressive unit.

DVI & RGB Input Block Explanation
(See Pages 21 and 22)

Main Picture (Input 5 or 6 DVI 480P)
From the selector IC inside the DVI module the user selects input 5 or 6 and that DVI-RGB signal and sync is sent to IC3901 to be converted to Y/CB/CR and separate H and V sync. The outputs of IC3901 go directly to IC2803 but only pass through this IC as they are already component signals and the sync has been separated. From IC2803 the signals are sent to the progressive unit for size and sync processing and onto IC4608 for final picture, color correction and sync processing.

Sub Picture (Input 5 or 6 DVI 480P)
Only one DVI input can be used to produce a sub picture (split screen effect) along with one of the other inputs. If the user selects input 5 or 6, the selector IC inside the DVI module sends that output to IC3906 for RGB to Y/CB/CR converting along with sync separating of the H and V sync signals. At this point all signals pass through IC2806 and onto the progressive unit for twin picture and sync processing.

Main Picture (1080I 33k and 480P 31K Full-Mode)
IC3901 (the main picture DVI output selector) selects input 5 or 6 and converts the RGB signals into Y/CB/CR signals in 1080I or 480P full-mode format and sends the signals to IC4305 (the full component switch). From IC4305 the signal directly enters IC4606 for picture, color and RGB processing. The separated 31k or 33K sync signals from IC3901 also go directly to IC4606 after passing through switch IC4610 for sync processing. 480P full-mode requires no size conversion from the I/P converter inside the progressive unit.

Main Picture (DVI Pure Digital Mode 1080I)
If the user selects Pure Digital mode than the path for input 5 or 6 will go through IC3907 (DVI/RGB selector IC) and switch IC4601 to IC4606 and enter the RGB matrix area for final processing before being sent onto the CRT drives. The sync signal is separated by IC3901 and passes through switch IC4610 and finally processed by IC4606.

Main Picture RGB 1080I (DSUB Connector 3)
The signal path for the (DSUB) RGB input 3 connector is exactly the same as DVI Pure Digital Mode. As you can see in the block diagram RGB cannot be used as a sub picture or in any other scan or screen mode other than 1080I full.

Audio Input/Output Block Explanation
(See Pages 23 and 24)

Audio Input

All inputted audio signals connect directly to IC2201 the main audio and video switch located on the Video UCOM PCB. When the user selects an audio and video source the main UCOM (IC1906) sends a serial command to IC2201 for selecting the proper input source. Note: The only input that does not go through IC2201 is the Center Channel Input. After proper input selection by IC2201 the right and left audio signals go to switch IC2202 the (left/right & center) switch. If the user had selected in the menu to use the set a center channel for all inputs this switch would move to the lower position. If the switch is in the L,R position the signals pass onto the preamp IC5502 located on the power supply PCB. The preamp IC provides input gain control, tone, bass boost, front surround and operates as an electronic volume control. From the preamp the signals pass onto the power amp IC1101 and onto the speakers. DC detection is provided prior to the speaker output to prevent damage to the speakers. This detection will cause the set to shut down. See page 60 and 62 for details.

Audio Output

The audio output jacks on this set can be used as a Fixed or Variable type. When used as a Fixed type the L,R audio signals from IC2201 simply pass through the switch IC2203 and the muting circuit than onto the RCA type jacks located on the back. If the menu has been set to make the output Variable the signals pass through the preamp and electronic volume control prior to entering switch IC2203.
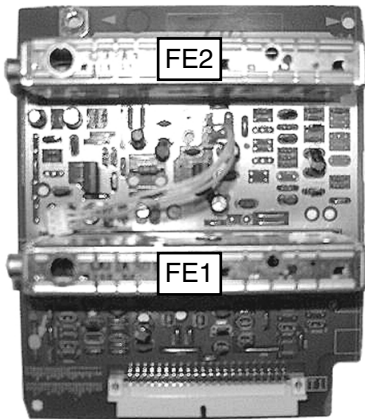
Monitor/TV Output

If the system mode is set to OFF (the default setting) this output operates the same as the normal audio output jacks in fixed mode.
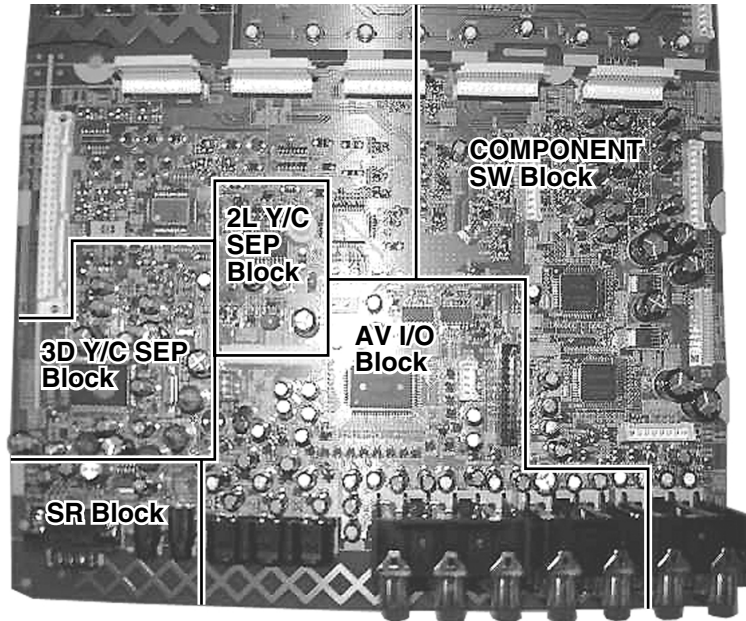If the user selects (System Mode On) from the menu this output sends the signal from the tuner only.
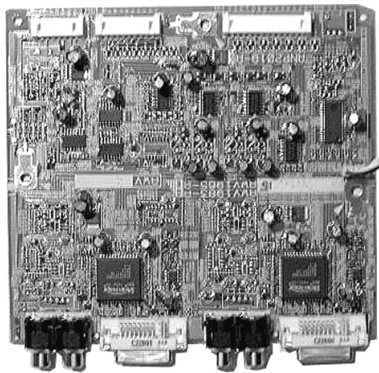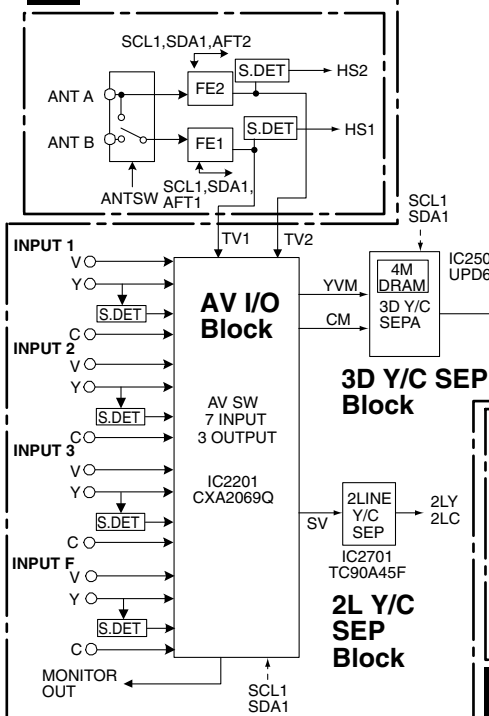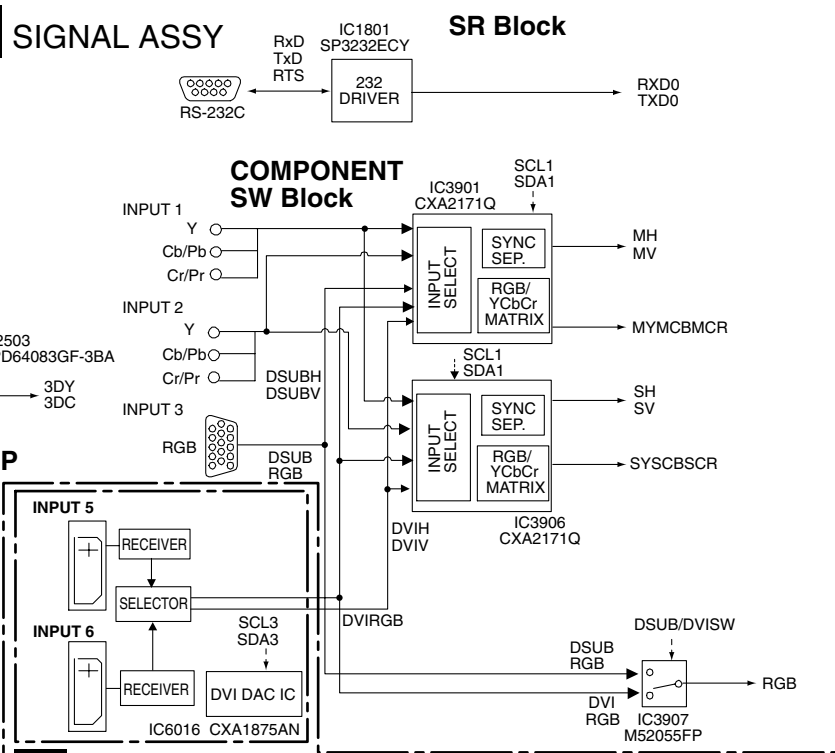
Circuit location By PCB

A TUNER ASSY

I DVI SERVICE ASSY

B SIGNAL ASSY

- COMPONENT SW Block
- 2L Y/C SEP Block
- 3D Y/C SEP Block
- AV I/O Block
- SR Block

B SIGNAL ASSY

SR Block

RS-232C — RxD TxD RTS → 232 DRIVER → RXD0 TXD0

IC1801 SP3232ECY

A TUNER ASSY

SCL1,SDA1,AFT2

ANT A
ANT B
ANTSW — FE2 — S.DET → HS2
FE1 — S.DET → HS1
SCL1,SDA1,AFT1

TV1 TV2

SCL1 SDA1

INPUT 1
V
Y
S.DET
C

INPUT 2
V
Y
S.DET
C

INPUT 3
V
Y
S.DET
C

INPUT F
V
Y
S.DET
C

MONITOR OUT

AV I/O Block

AV SW
7 INPUT
3 OUTPUT

IC2201
CXA2069Q

YVM
CM

4M DRAM
3D Y/C SEPA

IC2503
UPD64083GF-3BA

3DY
3DC

3D Y/C SEP Block

SV → 2LINE Y/C SEP → 2LY 2LC

IC2701
TC90A45F

2L Y/C SEP Block

SCL1 SDA1

COMPONENT SW Block

IC3901 CXA2171Q

SCL1 SDA1

INPUT 1
Y
Cb/Pb
Cr/Pr

INPUT 2
Y
Cb/Pb
Cr/Pr

INPUT 3
RGB

DSUBH DSUBV

DSUB RGB

INPUT SELECT → SYNC SEP. → MH MV
RGB/YCbCr MATRIX → MYMCBMCR

SCL1 SDA1

INPUT SELECT → SYNC SEP. → SH SV
RGB/YCbCr MATRIX → SYSCBSCR

DVIH DVIV

IC3906 CXA2171Q

I DVI SERVICE ASSY

INPUT 5
RECEIVER

SELECTOR

INPUT 6
RECEIVER

DVI DAC IC
CXA1875AN

IC6016

SCL3 SDA3

DVIRGB

DSUB/DVISW

DSUB RGB
DVI RGB

IC3907 M52055FP

→ RGB

SCL1 SDA1

Circuit location By PCB

J VIDEO UCOM SERVICE ASSY

SHARPNESS Block

AFC Block

VIDEO Block

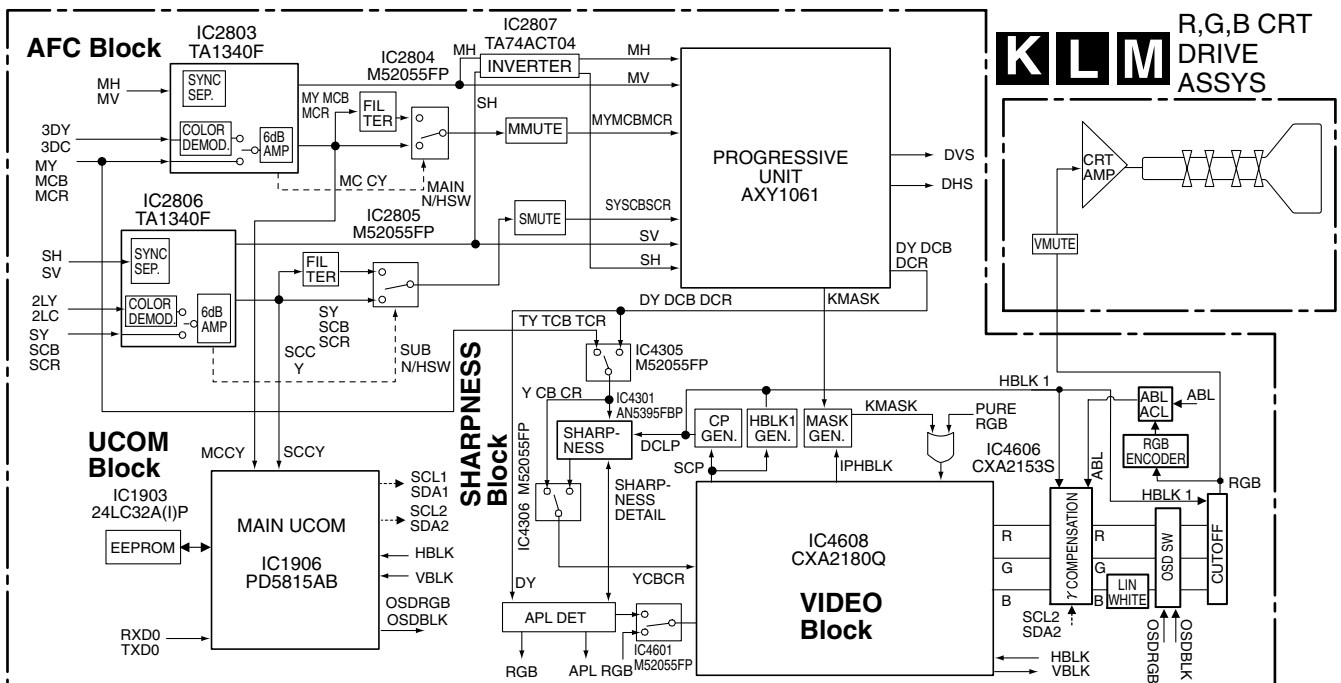**UCOM Block**

AUDIO PRE AMP Block

K R CRT DRIVE ASSY

M B CRT DRIVE ASSY

L G CRT DRIVE ASSY

VIDEO UCOM SERVICE ASSY

AFC Block

IC2803 TA1340F

MH
MV

SYNC SEP.

COLOR DEMOD.

6dB AMP

3DY
3DC

MY MCB MCR

MY
MCB
MCR

FILTER

MC CY

MAIN N/HSW

IC2804 M52055FP

IC2807 TA74ACT04

INVERTER

MH

MV

SH

MMUTE

MYMCBMCR

MH

MV

PROGRESSIVE UNIT AXY1061

DVS

DHS

IC2806 TA1340F

SH
SV

SYNC SEP.

COLOR DEMOD.

6dB AMP

2LY
2LC

SY
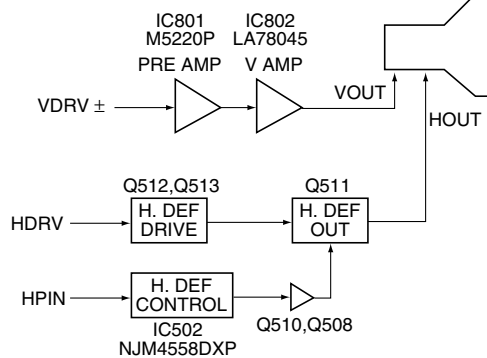SCB
SCR

FILTER

SCC Y

SUB N/HSW

IC2805 M52055FP

SMUTE

SYSCBSCR

SV

SH

DY DCB DCR

UCOM Block

IC1903 24LC32A(I)P

MCCY

SCCY

EEPROM

MAIN UCOM

IC1906 PD5815AB

RXD0
TXD0

SCL1 SDA1

SCL2 SDA2

HBLK

VBLK

OSDRGB OSDBLK

SHARPNESS Block

TY TCB TCR

Y CB CR

IC4305 M52055FP

IC4301 AN5395FBP

SHARP-NESS

DCLP

IC4306 M52055FP

SHARP-NESS DETAIL

DY

YCBCR

APL DET

RGB

APL RGB

IC4601 M52055FP

CP GEN.

HBLK1 GEN.

MASK GEN.

SCP

KMASK

IPHBLK

PURE RGB

VIDEO Block

IC4608 CXA2180Q

R

G

B

SCL2 SDA2

HBLK VBLK

DY DCB DCR

KMASK

K L M R,G,B CRT DRIVE ASSYS

CRT AMP

VMUTE

HBLK 1

ABL ACL

ABL

IC4606 CXA2153S

RGB ENCODER

γ COMPENSATION

R

G

B

LIN WHITE

OSD SW

CUTOFF

ABL

HBLK 1

RGB

OSDRGB

OSDBLK

30.

Circuit location By PCB

N DEFLECTION SERVICE ASSY

PRIMARY 2 Block

SECONDARY 2 Block

J901
LIVE ①
NEUTRAL ②
D901

SW REGULATOR CONTROL
IC901 AN8029

T901

FU1001 D1007 → V+21V
FU1002 D1009 → V-20V
FU1003 D1010 IC1001 → HT+
D1016 → V+120V

V DEF Block

IC801 M5220P
PRE AMP

IC802 LA78045
V AMP

VDRV ± →

VOUT

HOUT

Q512,Q513
H. DEF DRIVE

Q511
H. DEF OUT

HDRV →

HPIN →
H. DEF CONTROL
IC502 NJM4558DXP

Q510,Q508

HIGH VOLTAGE Block

T601

HIGH VOLTAGE OUTPUT → ANODE
→ FOCUS

F.B   +B

PD ←
CPURST ←
ABL ←
H.V. CONTROL

HVRST

31.

Circuit location By PCB

P POWER SUPPLY ASSY

POWER SUPPLY 1 Block

VELOCITY MODULATION Block

STANDBY Block

PRIMARY 1 Block

CONVERGENCE AMP Block

AUDIO POWER AMP Block

SECONDARY 1 Block

DIGITAL CONVERGENCE Block

O DIGITAL CONV. ASSY

PRIMARY 1 Block

S5291 POWER

FU201
RY202
RY201

D102   T101

D201   T201

SW REG. CONTROL
IC201 AN8029

SECONDARY 1 Block

D103 → V+5STB

FU301 D301 → V+4V
FU302 D303 → V+6V
D305 → V+10V
FU303 D307 → V+13V
FU304 D313 → V+30V

P POWER SUPPLY ASSY

VM Block

VM → SVM (VM AMP) Block → VM COIL CY

CONVERGENCE AMP Block

HBLK →
VBLK →
DIGITAL CONVERGENCE IC1204 CM0022AF
→ 6 ch DAC IC205 CD0031AM
→ IC401, IC402 STK392-180 CONVER AMP

O DIGITAL CONV. ASSY

7.1.2 DISASSEMBLY

About detect switch

This unit adopts the "Rear Cover opened ! detection" system.

Outline and caution

This unit uses contents protection by HDCP for copyright protection.
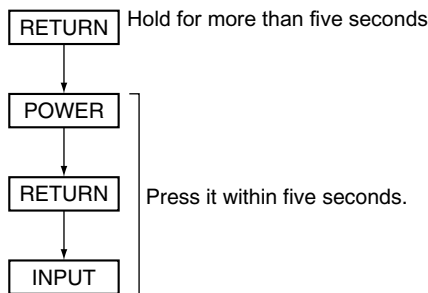Never turn on the power to this unit with the rear cover removed without holding the detect switch closed.

Detect switch does not detect at power supply OFF or the remote control unit wait state. Please close this detect switch with tape before turning on the power.

• Rear View
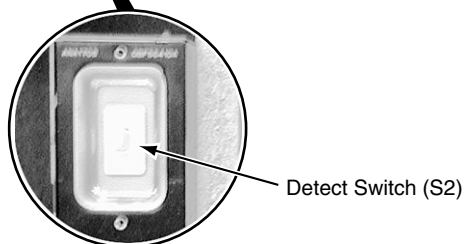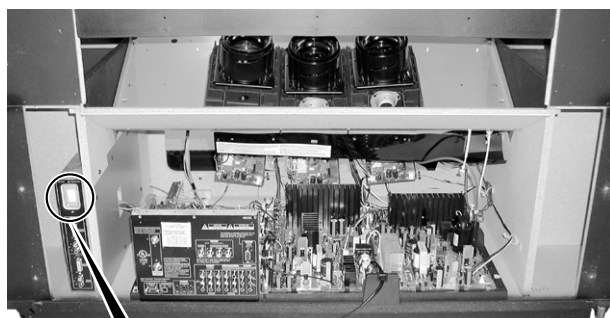
Detect Switch (S2)

When detect switch has Activated

Main unit key
(Remote control unit key is impossible.)

RETURN Hold for more than five seconds

↓

POWER

↓

RETURN Press it within five seconds.

↓

INPUT

↓

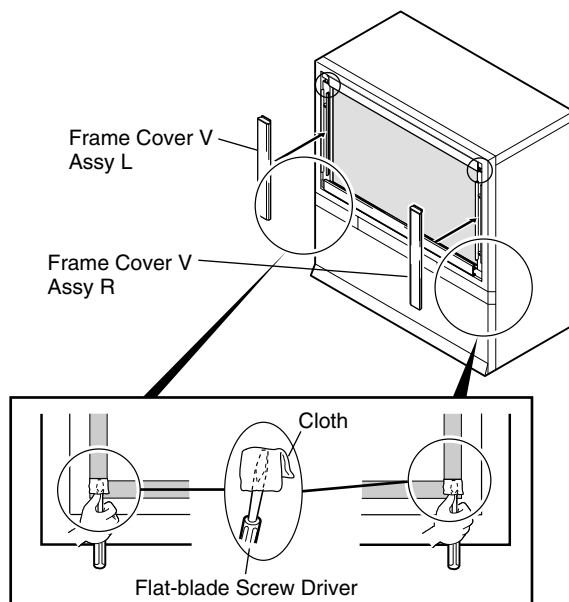Start with the service factory mode.

Note:
You can remove the Screen without removing the Frame Cover and AR Panel.

1 Frame Cover and AR Panel

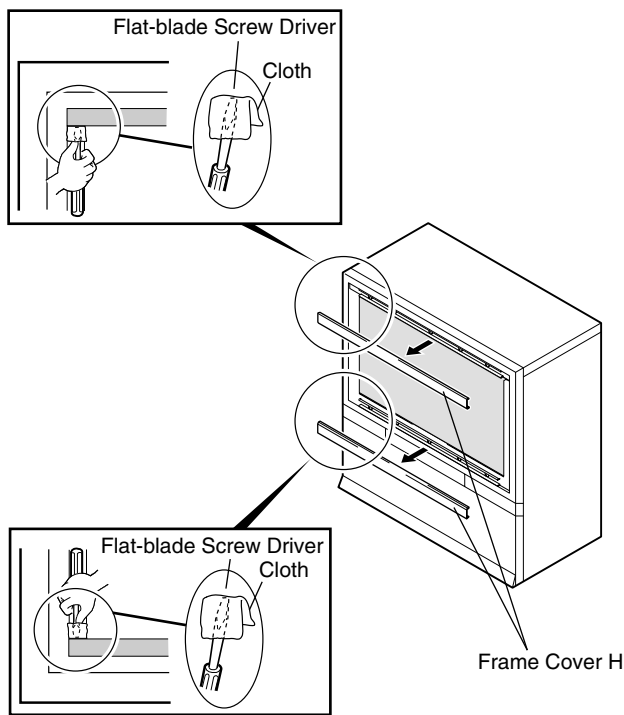**Disassembly :** ① → ② → ③ → ④ → ⑤ → ⑥ → ⑦ → ⑧ → ⑨
Assembly :   ⑨ → ⑧ → ⑦ → ⑥ → ⑤ → ④ → ③ → ② → ①
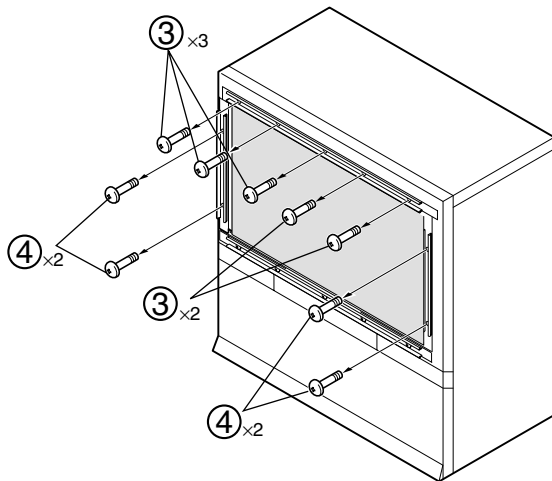
① Remove the Frame Cover V Assy L and R

Frame Cover V Assy L

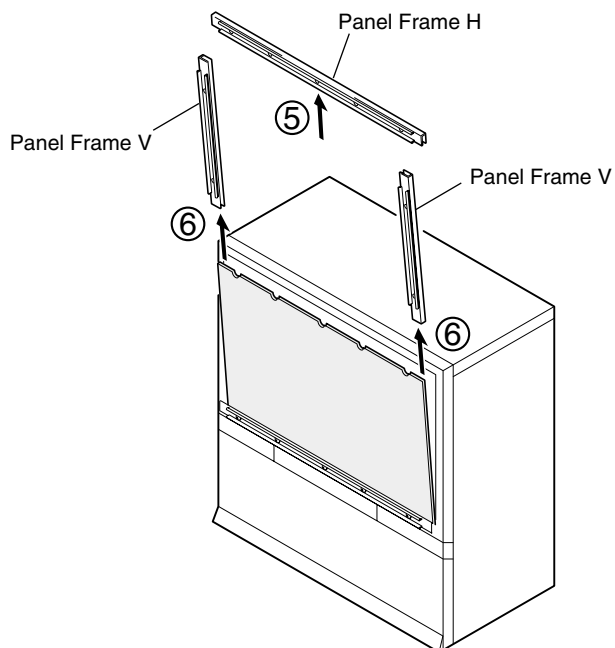Frame Cover V Assy R

Cloth

Flat-blade Screw Driver

② Remove the Frame Cover H

Flat-blade Screw Driver

Cloth

Flat-blade Screw Driver
Cloth

Frame Cover H

③ Remove five screws

④ Remove four screws

③ ×3

④ ×2

③ ×2

④ ×2

⑤ Remove the Panel Frame H

⑥ Remove the Panel Frame V
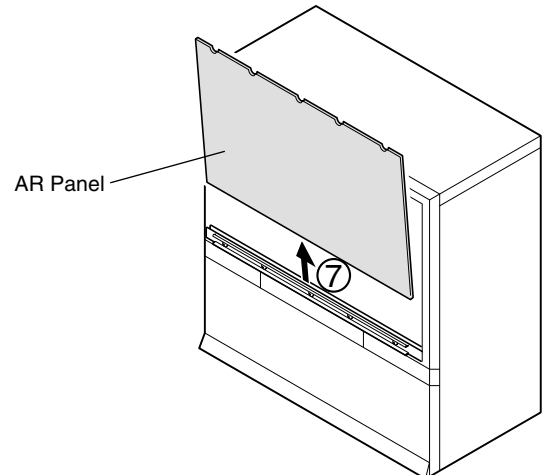
Panel Frame H

⑤

Panel Frame V

⑥

Panel Frame V

⑥

⑦ Remove the AR Panel

Caution :
As oil from the hands is easily attached to, but difficult to remove from the AR panel, be sure to wear gloves when you handle the panel.
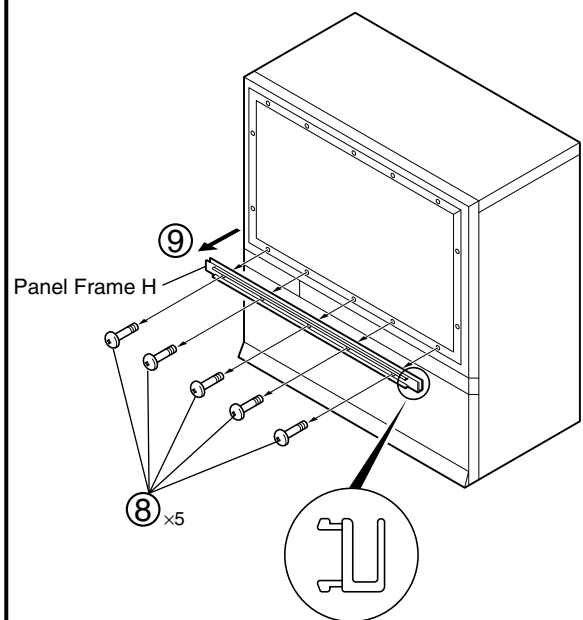If stains are attached to the panel, wipe them off with a piece of clean cloth moistened with water.
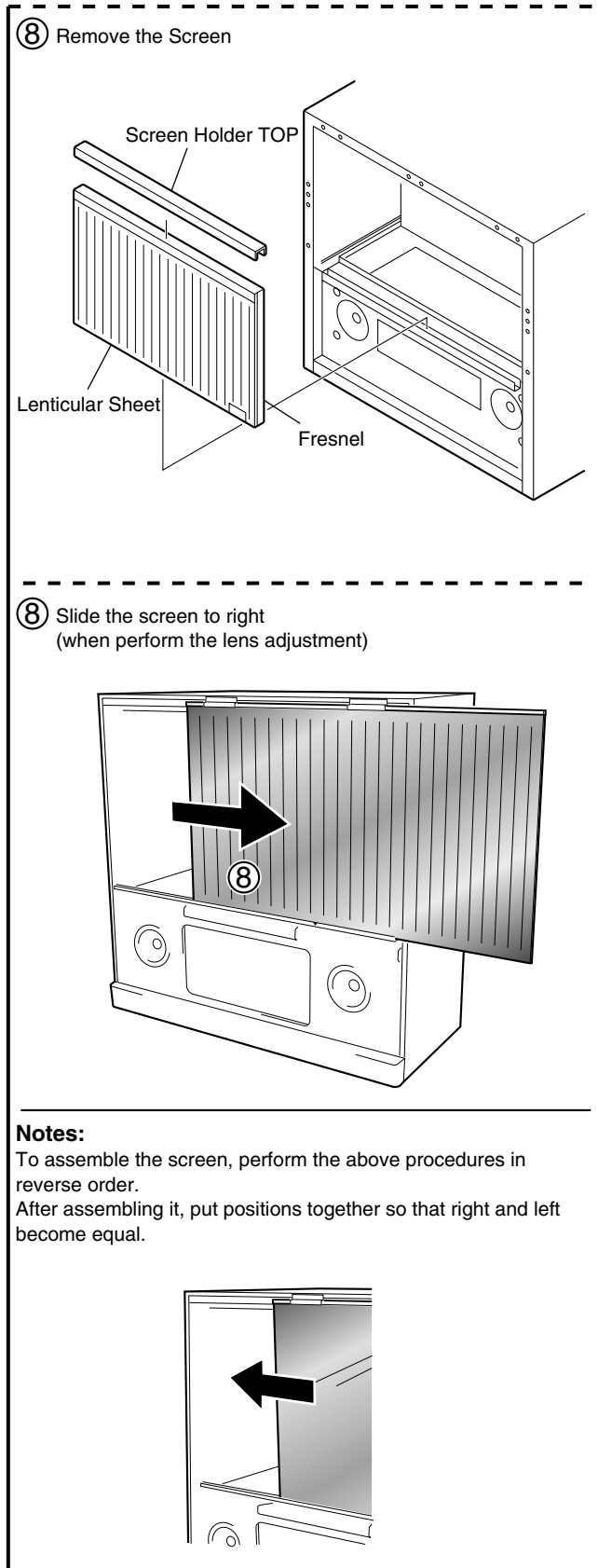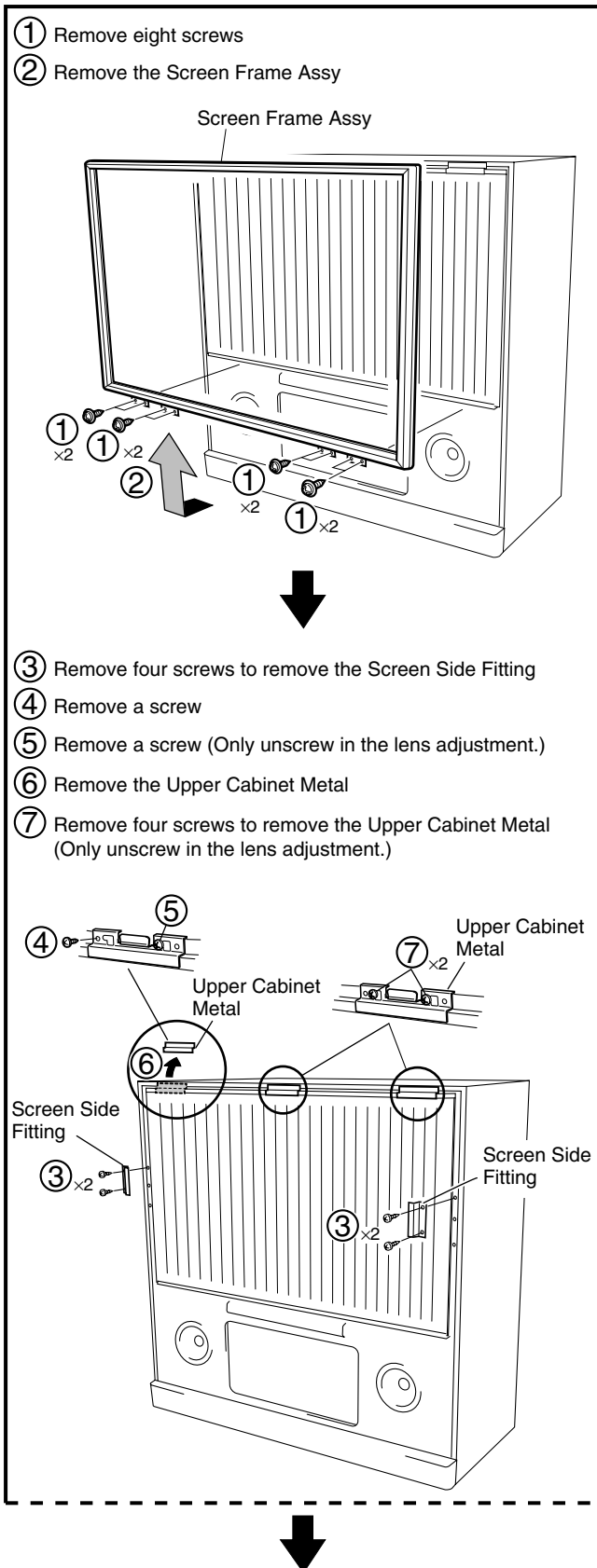If stains persist, use undiluted alcohol.

AR Panel

⑦

⑧ Remove five screws

⑨ Remove the Panel Frame H

⑨

Panel Frame H

⑧ ×5

34.

Screen

Note:
You can remove the Screen without removing
the Frame Cover and AR Panel.

① Remove eight screws

② Remove the Screen Frame Assy

Screen Frame Assy

①×2 ①×2

②

①×2

①×2

③ Remove four screws to remove the Screen Side Fitting

④ Remove a screw

⑤ Remove a screw (Only unscrew in the lens adjustment.)

⑥ Remove the Upper Cabinet Metal

⑦ Remove four screws to remove the Upper Cabinet Metal
(Only unscrew in the lens adjustment.)

④ ⑤ Upper Cabinet Metal

⑦×2

Upper Cabinet Metal

⑥

Screen Side Fitting

③×2

Screen Side Fitting

③×2

⑧ Remove the Screen

Screen Holder TOP

Lenticular Sheet

Fresnel

⑧ Slide the screen to right
(when perform the lens adjustment)

⑧

Notes:
To assemble the screen, perform the above procedures in
reverse order.
After assembling it, put positions together so that right and left
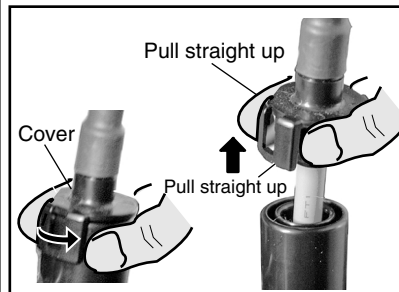become equal.

Disconnect the Anode Cable

WARNING:
Before you disconnect the anode cable, turn off the power,
unplug the AC plug and let the unit discharge for more than 1 minute.

MEASURING METHOD
Disconnect the FBT anode cable as shown below.
Measure at the point where the cable enters the FBT.

Caution : Take extra precaution when
measuring the voltage. High voltages are also
present in surrounding circuit boards. (CRT
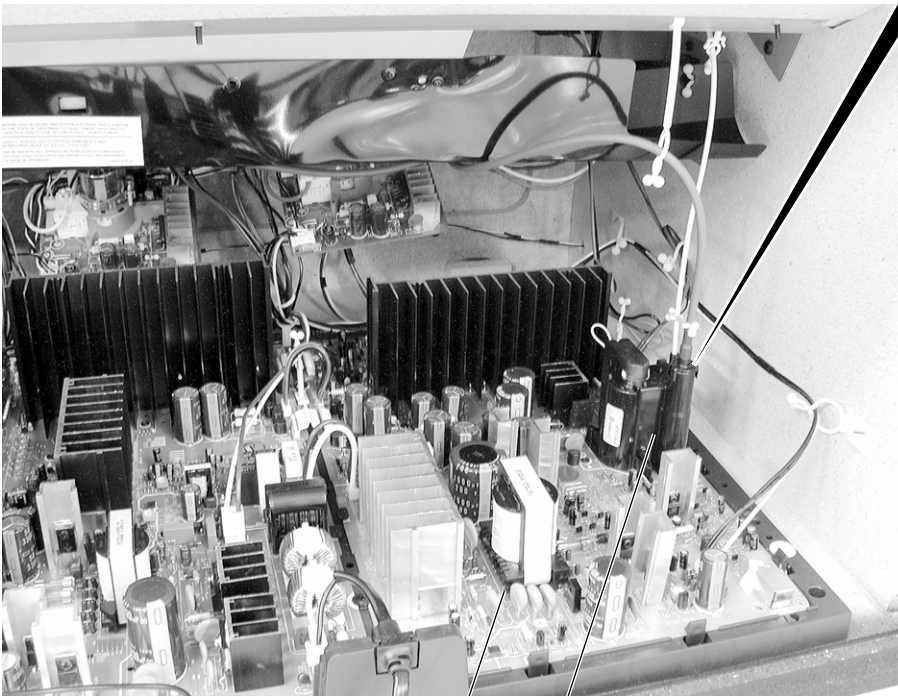assy, POWER SUPPLY assy)

Pull straight up

Cover

Pull straight up

SERVICEMAN WARNING
Before removing the anode cable, turn off
the power, unplug the AC plug and let the
unit discharge for more than 1 minut.

Anode Cable

FBT
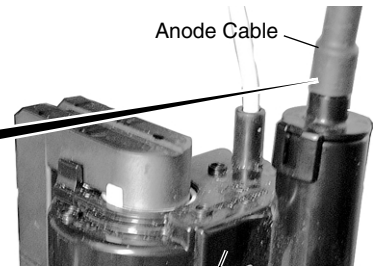
Note :
When reconnecting the cable, proceed in the
reverse order. After reconnecting, tug on the
cable to check that it is secure.

• Rear View

FBT

DEFLECTION SERVICE Assy

ADJUSTMENT
INTRODUCTION

• IMPORTANT

When replacement of the following assemblies are required during repairs, be sure to replace the EEPROMs in
order to retain the adjustment data of the unit and to facilitate adjustment after the replacement of the assemblies.
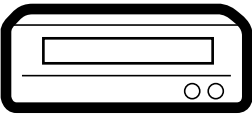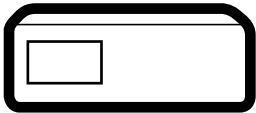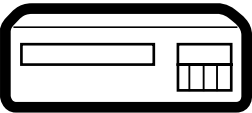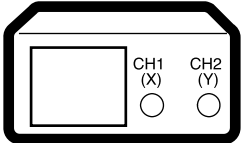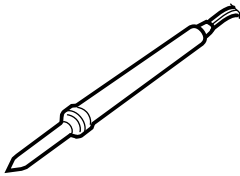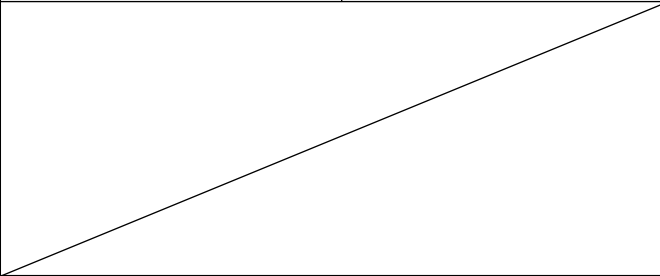
PC Board	EEPROM	Main Contents of Memory
VIDEO UCOM SERVICE Assy	IC1903 [24LC32(I)P]	Adjustment data, such as W/B and color data, Convergence offset data in FACTORY mode, User data set on the MENU
DIGITAL CONV. Assy	IC1203 [24LC64(I)P]	Convergence adjustment data

Notes:
• Even if the EEPROMs are replaced, adjustment may be necessary, depending on the part or assembly to be replaced.

• Even if the EEPROMs are replaced, if the EEPROMs are damaged or if their data have been changed from the adjustment
  data, the status before the failure will not be restored. Check the status of the unit after replacement of the EEPROMs, and
  readjust if necessary.

  This Model employs a CRT Discharge Counter. It can be viewed by entering the Second Factory Mode and
  Pressing (9,0). The display will show (Discharge Count__XX__).

JIGS AND MEASURING INSTRUMENTS

Remote control unit AXD1468	⊖ Screwdriver	⊖ Adjustment screwdriver	Color bar generator
D. DC Voltmeter	DVD / LD Player	Monoscope	Dual-trace oscilloscope
HD Signal generator	Soldering iron		

ADJUSTMENT LOCATION AND ITEMS

Assembly Adjustment Location
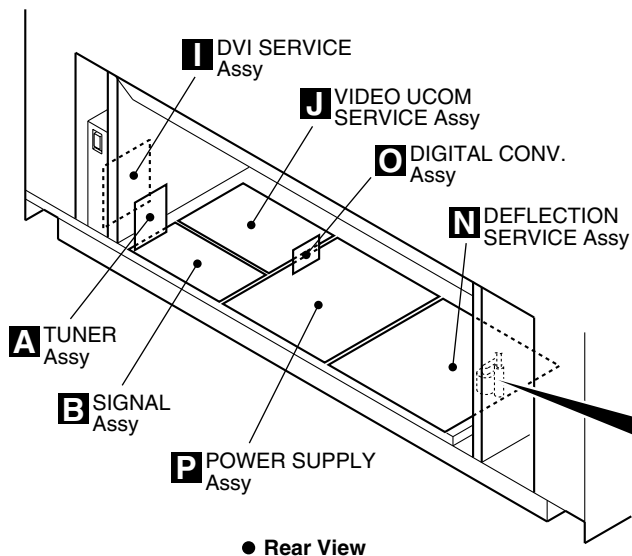
I DVI SERVICE Assy

J VIDEO UCOM SERVICE Assy

O DIGITAL CONV. Assy

N DEFLECTION SERVICE Assy

A TUNER Assy

B SIGNAL Assy

P POWER SUPPLY Assy

● **Rear View**

MEASURING METHOD
Disconnect the FBT anode cable as shown below.
Measure at the point where the cable enters the FBT.

Caution :
Take extra precaution when measuring the voltage. High voltage are also present in surrounding circuit boards. (CRT assy, POWER SUPPLY assy)

SERVICEMAN WARNING
Before removing the anode cable, turn off the power, unplug the AC plug and let the unit discharge for more than 1 minut.

Anode Cable

Pull straight up

Cover

Pull straight up

FBT
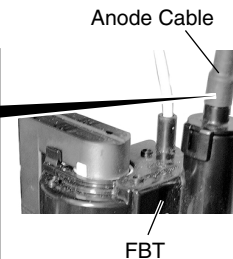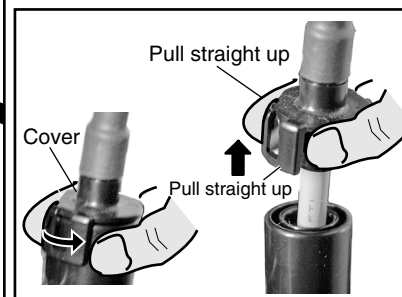
Note :
When reconnecting the cable, proceed in the reverse order. After reconnecting, tug on the cable to check that it is secure.
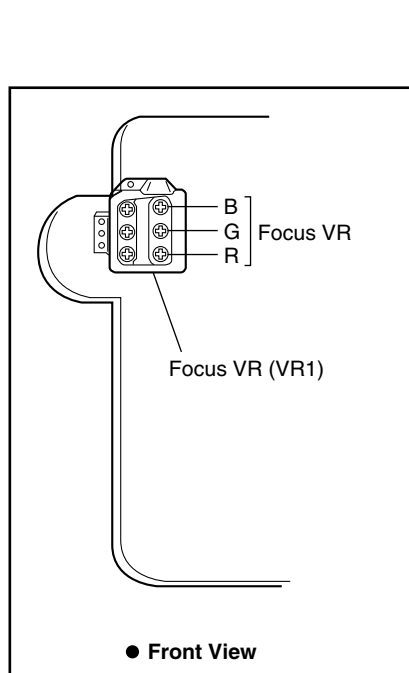
Lens assy (For Red)   Lens assy (For Green)   Lens assy (For Blue)

B
G   Focus VR
R

Focus VR (VR1)

● **Front View**

Rear View

CRT SERVICE Assy B   CRT SERVICE Assy G   CRT SERVICE Assy R

Deflection Yoke (G)

Deflection Yoke (B)

Deflection Yoke

Deflection Yoke (R)

BK   GK   RK

B CRT DRIVE Assy   G CRT DRIVE Assy   R CRT DRIVE Assy

Centering magnet
(Turn in either direction untill cross signal becomes white.)
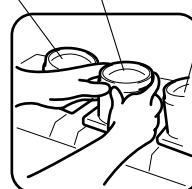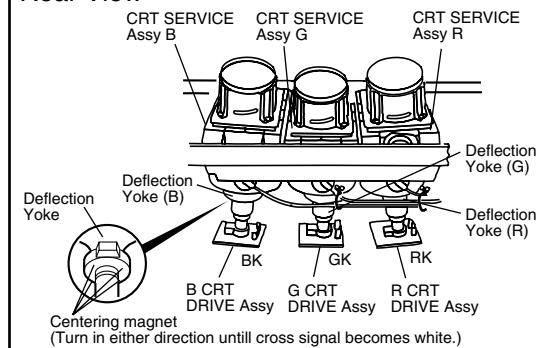
Adjustment Items

1 Brightness Adjustment
2 Deflection Yoke Adjustment
3 Focus Adjustment
4 Screen Size Adjustment
5 Convergence Adjustment
6 White Balance Adjustment
7 Panel Adjustmen for 480i
8 Panel Adjustment for 480P

Assembly Adjustment Location Guide

If POWER SUPPLY ASSY — is repaired or replaced →

❺ Convergence Adjustment

If DEFLECTION SERVICE ASSY — is repaired or replaced →

❶ Brightness Adjustment (∗2)
❸ Focus Adjustment (VR1: FOCUS VR) (∗2)
❹ Screen Size Adjustment (∗2)
❺ Convergence Adjustment (∗2)
❻ White Balance Adjustment (∗2)

If R, G or B CRT DRIVE ASSY — is repaired or replaced →

❶ Brightness Adjustment (∗1)
❻ White Balance Adjustment (Composite STD :∗1, Others :∗2)

If DIGITAL CONV. ASSY — is repaired or replaced →

❸ Focus Adjustment (∗2)
❹ Screen Size Adjustment (∗2)
❺ Convergence Adjustment (∗2)

If VIDEO UCOM SERVICE ASSY — is repaired or replaced →

❶ Brightness Adjustment (∗2)
❻ White Balance Adjustment (Composite STD : ∗1, Others :∗2)
❼ Panel Adjustment for 480i (∗1)
❽ Panel Adjustment for 480P (∗1)

If SIGNAL ASSY — is repaired or replaced →

No adjustment is required

If DVI SERVICE ASSY — is repaired or replaced →

No adjustment is required

If CRT ASSY (R, G or B) — is repaired or replaced →

❶ Brightness Adjustment (∗1)
❷ Deflection Yoke Adjustment (∗1)
❸ Focus Adjustment (Lens : ∗2, VR1 Focus VR :∗1)
❺ Convergence Adjustment (∗2)
❻ White Balance Adjustment (Composite STD : ∗1, Others :∗2)

If LENS ASSY (R, G or B) — is repaired or replaced →

❸ Focus Adjustment (Lens : ∗1, VR1 Focus VR :∗2)
❺ Convergence Adjustment (∗2)

If MIRROR and SCREEN — is repaired or replaced →

❺ Convergence Adjustment (∗2)

If OTHER ASSY — is repaired or replaced →

No adjustment is required

Note :
*1: Readjustment necessary
*2: Turn on the power and confirm the screen. When adjustment deviates, readjusted if necessary.

• When the EEPROMs are replaced, check the status of the unit.
• If any IC of the EEPROM is damaged, readjustment of all the items is necessary.

• The necessary adjustment items differ, depending on the assembly or optical part replaced. Check and readjust the adjustment items corresponding to the replaced assembly or part, following adjustment procedures 1 to 8.
  Example: When the DIGITAL CONV. Assy is replaced, perform the following:
  3. Focus check/adjustment → 4. Screen size check/adjustment → 5. Convergence check/adjustment

FACTORY ADJ MODE

Factory Adjustment Mode

Select 1st FACTORY ADJ Mode	Selecting the mode for adjustment operations.

Start

TV POWER

" ON "

INPUT1 position

Front panel

Press the switch with thin rod.

Normal picture

Cyclically

2nd FAC-TORY ADJ mode picture

1st FAC-TORY ADJ mode picture

The 2nd FACTORY ADJ mode is not used in the adjustment.
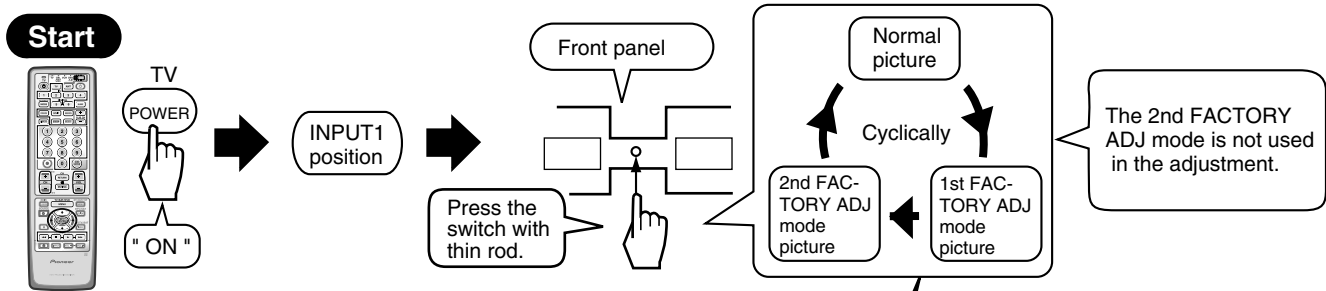
- To enter FACTORY mode, use the key(s) on the remote control unit or main unit. To release FACTORY mode, use the key(s) of the remote control unit or the main unit, or turn the power off. If the unit remains in FACTORY mode without any operation for 8 minutes, it will be automatically released.
- In FACTORY mode, data for the picture and audio qualities are standard, and the FLESH TONE setting is always off.
- When the unit enters FACTORY mode, settings such as audio muting, MENU, and SPLIT (two split-screens) are released.
- The Convergence data which user adjusted are within the FACTORY mode. Clear the convergence data by releasing the FACTORY mode after it is further within the MANUAL CONVER mode or OFFSET CONVER mode.
- When the unit exits FACTORY mode, the TV/CATV mode becomes AIR (settings of ANT and CH are those last stored in memory).
- CONVER. OSD (cross hatch) can be turned on and off cyclically by using the YELLOW key only during CONVER mode (MANUAL, AUTO, OFFSET adjustments).
  (Default: The cross hatch is on only in CONVER. mode.)

(1) INPUT OFFSET mode — Telop : White

(MUTING) →

RANGE CHECK mode (TV/SAT/DVD MENU) — Telop : Red

(SPLIT) →

SERVICE mode — Telop : White (6)

(MUTING) ↓

(2) PICTURE OFFSET mode — Telop : White

(MUTING) ↑

SIGNAL ADJ mode (5) — Telop : White

(SPLIT) (SPLIT) ↓

PureCinema mode (7) — Telop : White

(MUTING) ↓

(3) COLOR TEMP OFFSET mode — Telop : White

(MUTING) →

CONVER ADJ mode (4) — Telop : White

(MUTING) ↑
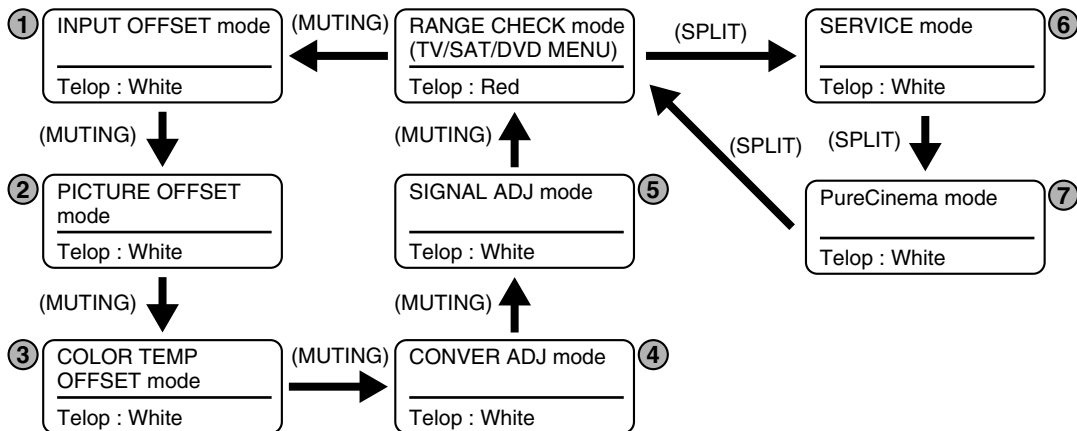
① INPUT OFFSET Mode

```
INPUT OFFSET MODE
1. STD
2. COMP (15kHz)
3. COMP (31kHz)
4. COMP (33kHz)
5. COMP (45kHz)
6. PURE RGB
7. PURE RGB (DVI)
8. TV
```

Adjustment for service is only
1. STD, 4. COMP (33KHz) and 6.PURE RGB.

	INPUT OFFSET Mode	Key (s) on the Remote Control Unit
1	STD	▼ (DOWN)
4	COMP (33kHz)	PinP CH+, SUB CH+
6	PURE RGB	CH ENTER

(MUTING)

```
STD




F1          COLOR          24
```
Telop : Blue

② PICTURE OFFSET Mode

```
PICTURE OFFSET MODE
1. RTM
2. GAME
3. MODULE
4. RGB- YCbCr: 33K
5. RGB- YCbCr: 31K
```

Do not perform the adjustment for service.

③ COLOR TEMP OFFSET Mode

```
COLOR TEMP OFFSET MODE
1. NEWS
2. LIVE
3. FILM
4. B&W
5. FILM FOR RTM
```

Do not perform the adjustment for service.

④ CONVER ADJUST Mode

```
CONVER ADJUST MODE
1. SIZE
2. OFFSET CONVER MODE1
3. OFFSET CONVER MODE2
4. OFFSET CONVER MODE3
5. FINE CONVER
6. AUTO CONVER
7. CONVER STATIC
8. DVI H.PHA ADJ
```

Adjustment for service is items of 1, 4 and 5.

	CONVER ADJ Mode	Key (s) on the Remote Control Unit
1	SIZE	ANT
4	OFFSET CONVER MODE3	• (DOT)
5	FINE CONVER	SET

(MUTING)

```
ADJUST          H SIZE




F1                    −20
```
Telop : White

• Mode changes cyclically as follows when uses the • (DOT) key.

OFFSET CONVER MODE1 ⟶ **OFFSET CONVER MODE2** ⟶ **OFFSET CONVER MODE3**

For Adjustment of this item, screen mode has two modes as FULL and HD.
Screen mode changes by the "SCREEN" key cyclically.

FULL ⟷ **HD**

⑤ SIGNAL ADJ Mode

```
SIGNAL ADJ MODE
1. 480I PANEL
2. 480P PANEL
3. SIGNAL
4. TUNER TEST MODE
5. AUTO ACL
6. DVI LPF ADJ
```

Adjustment for service is items of 1, 2 and 5.

	SIGNAL ADJ Mode	Key (s) on the Remote Control Unit
1	480I PANEL	CH RET
2	480P PANEL	▶ (RIGHT)
5	AUTO ACL	PinP CH–, SUB CH–

(MUTING)

```
ADJUSTMENT     480I PANEL




          BRIGHT     −10
```
Telop : Yellow

⑥ SERVICE Mode

```
SERVICE MODE
1. TIME SPACE FILTER
2. Y – MOTION ADAPTATION
3. C – MOTION ADAPTATION
4. AFC SYSTEM
5. IP SETTING
6. FREQ JUDGMENT ADJ
```

Do not perform the adjustment for service.

⑦ PureCinema Mode

```
PureCinema MODE
1. 2 – 3 COMPONENT ADJ
2. 2 – 3 S–VIDEO ADJ
3. 2 – 3 COMPOSITE ADJ
4. 2 – 2 COMPONENT ADJ
5. 2 – 2 S–VIDEO ADJ
6. 2 – 2 COMPOSITE ADJ
```

Do not perform the adjustment for service.

ADJUSTMENT

1 Brightness Adjustment

Start (**1st FAC**) Input signal : Black Burst (INPUT 1)

(DOWN)

STD

CUT–R ▢

Telop: Blue   Data value

⓪

+ CH −

ⓑ 0

④

Black burst

STD   OFFSET

BRIGHT

+ VOL −

⓪ : CUT-R

+ CH − : CUT-G

: CUT-B

Cut off level (180V DC)

GND

+ VOL − or

CH1 (X) CH2 (Y)

Oscilloscope

G CRT DRIVE ASSY

TP-GK

Cut off level (180V DC)

GND

CH1 (X) CH2 (Y)

Oscilloscope

B CRT DRIVE ASSY

TP-BK

B CRT DRIVE ASSY VR5201

Cut off level (180V DC)

GND

R CRT DRIVE ASSY VR5101

CH1 (X) CH2 (Y)

Oscilloscope

R CRT DRIVE ASSY

TP-RK
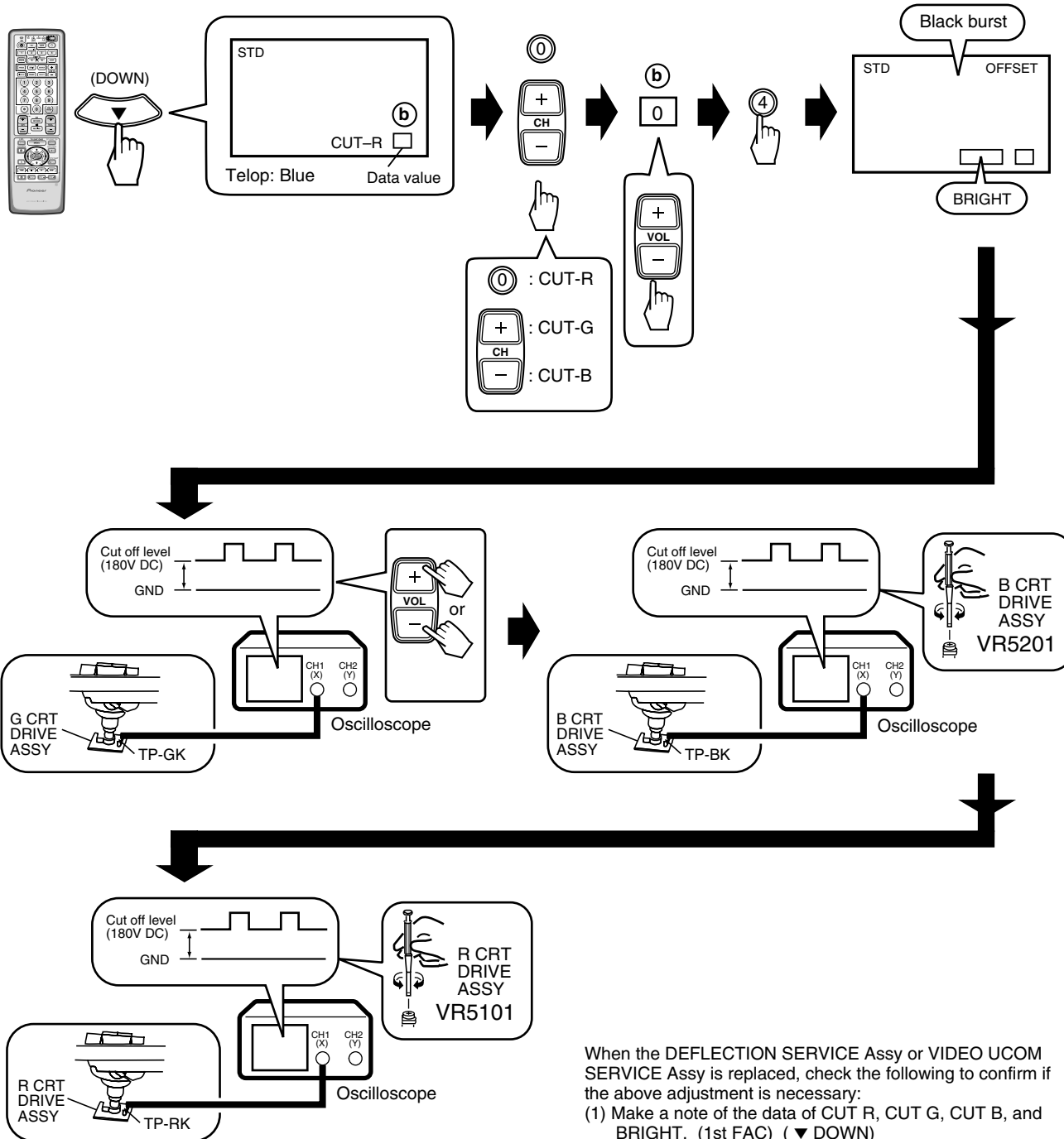
When the DEFLECTION SERVICE Assy or VIDEO UCOM SERVICE Assy is replaced, check the following to confirm if the above adjustment is necessary:
(1) Make a note of the data of CUT R, CUT G, CUT B, and BRIGHT. (1st FAC) (▼ DOWN)
(2) Input "0" as parameters for (1) and check TP-RK, TP-GK and TP-BK of the CRT DRIVE assembly. If the levels are within 180 V ±5 V, the adjustment is not necessary. Input the noted data.
If the levels are not within the above level, proceed with the above adjustment.

❷ Deflection Yoke Adjustment

❷ -1   Deflection Yoke Lean Adjustment

Start
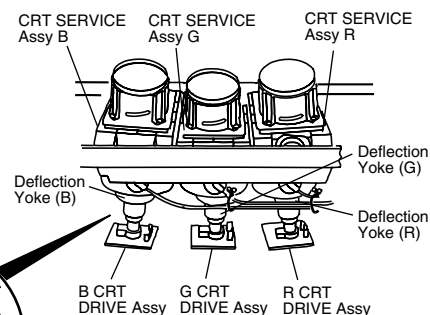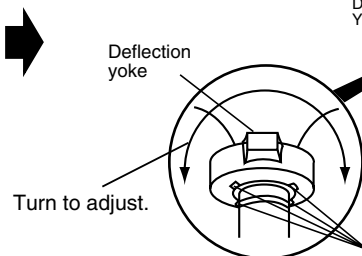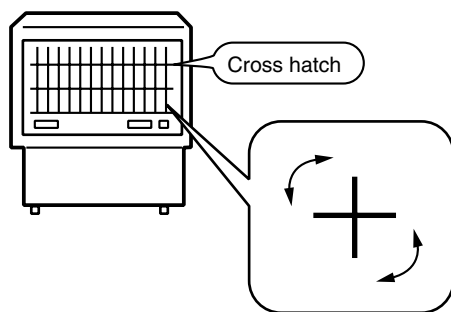- Input a stable signal (e.g. from an DVD / LD player or SG) to the INPUT 1 connector.
- MENU → SETUP → CONVERGENCE → ADJUSTMENT FOR 480P → ADJ MULTI-POINT
- The cross hatch disappears if there is no operation with the remote control unit for about 8 minutes. If the cross hatch disappears, repeat the above operation with the remote control unit or main unit key.

Cross hatch

CRT SERVICE Assy B   CRT SERVICE Assy G   CRT SERVICE Assy R

Deflection Yoke (B)

Deflection Yoke (G)

Deflection Yoke (R)

Deflection yoke

B CRT DRIVE Assy   G CRT DRIVE Assy   R CRT DRIVE Assy

Turn to adjust.

Centering magnet
(Turn in either direction until cross signal becomes white.)

- Turn the deflection yoke of the replaced CRT so that the cross hatch of the color corresponding to the replaced CRT converges with that of the CRTs not replaced.

- When a CRT is replaced, check the position of the VM (Velocity Modulation) yoke.

0 mm
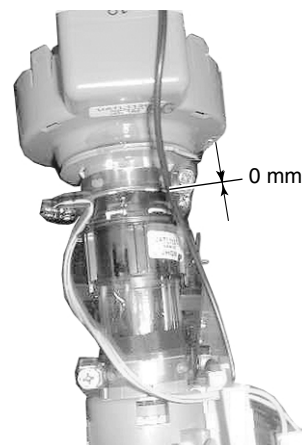
❷ -2   Screen Center Adjustment

Start

Cross hatch
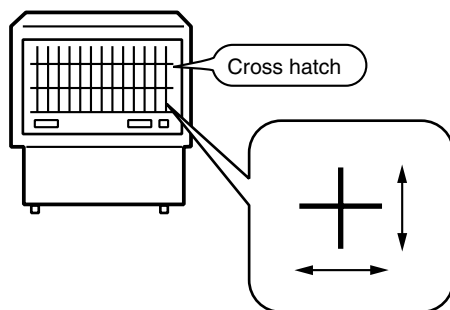
- Move the centering magnet of the deflection yoke for the replaced color so that the horizontal and vertical lines at the center of the screen align with the lines for a color not replaced.
- Apply an adhesive between the neck part of CRT and centering magnet so that the centering magnet of the deflection yoke does not move.
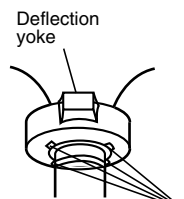
Deflection yoke

Centering magnet
(Turn in either direction until cross signal becomes white.)

❸ Focus Adjustment

❸ -1 Focus Adjustment of Lens Assy

Start

Cross hatch

Lens assy (For Green)

Lens assy (For Red)

Lens assy (For Blue)

"Best focusing"

❸ -2 Focus VR Adjustment

Cross hatch

Focus VR (VR1)

B
G FOCUS VR
R

Turn the Focus VR for best focusing.
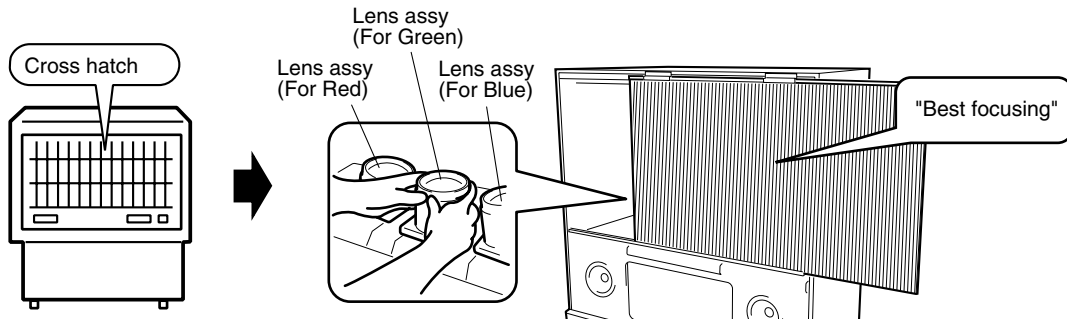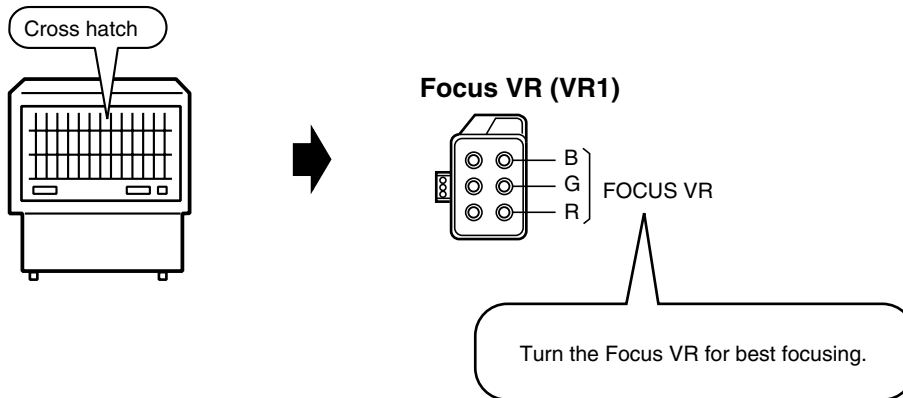
Perform lens focus adjustment after the unit has been warmed up
(some time after turning the unit on with the Power switch).

Set the output to 480P

Adjust the focus of each lens so that :
For Green :
• the vertical and horizontal lines at the center become their thinnest.
• the scanning lines at the center are their strongest.
• the red halo faintly appears at the center.
For Red :
• the vertical and horizontal lines at the center become their thinnest.
• the scanning lines at the center are their strongest.
For Blue :
• the vertical and horizontal lines at the center become their thinnest.
• the green halo disappears, and the blue halo begins to appear.

Note on tightening the thumbscrew after adjustment :
Observe the crosshatch signals on the screen while tightening the thumbscrew,
to check that the lens does not rotate with the thumbscrew.

4 Screen Size Adjustment

Check if both vertical and horizontal sizes are within 91% ±2%. If they are not, perform the size adjustment as follows:

4 -1 Size Mode

Start (1st FAC)

Note :
Screen mode : FULL

ADJUT   H SIZE — (b) Size mode

F1   -24 — (a) Data value

Telop: White

ANT

(a) **Data value**

+ / − VOL   or

-128 to 127
(even data only)

• Mode for roughly adjusting the horizontal and vertical sizes of the main deflection.
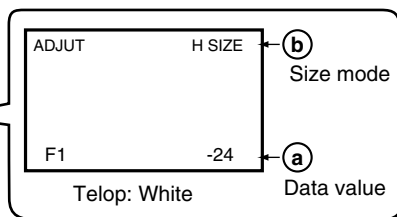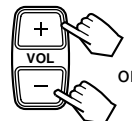• In this mode, the color is green only, screen size is FULL and the contrast is +10.
• The above settings are cleared when this mode is exited.

(b) **Size mode**

① ②

① : H Size (15 kHz)
② : V Size

③ : H PHA (15K)
⑥ : H SIZE (HD)
(fixed value "C" can be varied)
⑦ : V SIZE (HD)
(fixed value "I" can be varied)
⑨ : H PHA (31K RGB)
⓪ : H PHA (33K RGB)
CH + : H PHA (31kHz)
CH − : H PHA (33kHz)

③ ⑥ ⑦ ⑨ ⓪

+ / − CH   or

Table on H SIZE and V SIZE data

Picture Quality Mode	H SIZE	V SIZE
FULL	A	B
HD	A+C	B+I

A, B : Adjustment values
C, I : Fixed values
A+C : Addition of A and C
B+I : Addition of B and I

• Perform the H SIZE and V SIZE adjustments only in FULL mode (NTSC MONOSCOPE signal input).
• Release the FACTORY mode, then change the screen mode and confirm that the picture is not missing.
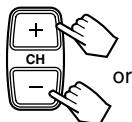
Note :
• The adjustment is unnecessary for "C" and "I" so that is set in factory shipment by the most suitable value. However, please adjust it when a screen is missed when displayed the HD source on the screen.
• For H PHA, refer to the section "• Reference."

The factory-preset values are as follows:

Key No.	Adjustment Value
1 : H SIZE (15K)	Approx. -36 ± 30
2 : V SIZE	Approx. +01 ± 10
6 : H SIZE (HD)	Approx. +27 ± 30
7 : V SIZE (HD)	Approx. +06 ± 10

Note: Varies depending on the factory-preset value.

4 -2 Vertical Size Adjustment
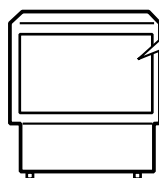
Start (1st FAC)

Note :
Screen mode : FULL

INPUT 1:Monoscope

ANT

②

ADJUST V SIZE

Green screen

F1   ▢

91% ± 2%

or

INPUT TV General broadcasting

Adjust the size so that the picture is completely displayed on the screen.

+ / − VOL

4 **-3 Horizontal Size Adjustment**

Start **1st FAC**

INPUT 1:Monoscope

ANT

1

ADJUST H SIZE

Green screen

F1

91% ± 2%

or

INPUT TV
General
broadcasting

Adjust the size so that the picture is completely
displayed on the screen.

+
VOL
−
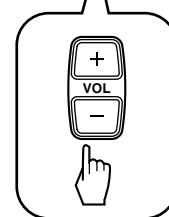
• Reference

The H PHASE adjustment is required if the left or right part of the screen becomes black, as illustrated below, depending on the format
of the input signal (Ex. component 31.5 kHz, RGB 33K etc.).

Ex. Component 31K

Black

Animation

Animation

Animation

screen

+
VOL
−

Move the part of animation leftward with VOL–.
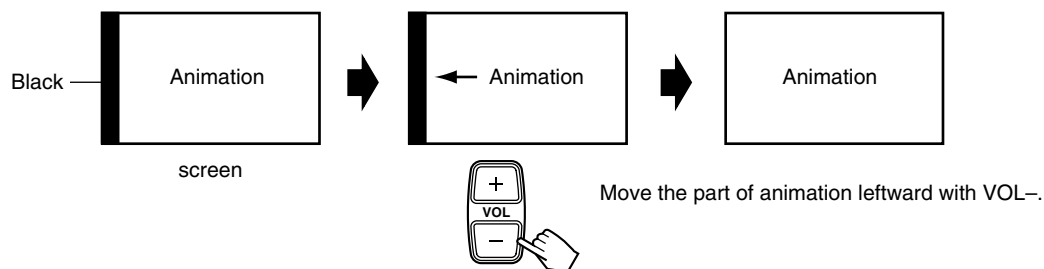
• About H. PHASE

In principle, adjustment of the data for the H. PHASE is not required.
Check whether the H. PHASE data are the factory-preset values, as indicated below:

Key No.	Adjustment Value
3 : H PHA (15K)	8
CH+ : H PHA (31K COMP)	10
CH- : H PHA (33K COMP)	10
9 : H PHA (31K RGB)	15
0 : H PHA (33K RGB)	11

15K : CONPOSITE, S COMPONENT (480i)
31K : COMPONENT (480P)
33K : COMPONENT (1080i)
31K RGB : RGB (480P)
33K RGB : RGB (1080i)

The screen moves to the right or the left if the above data are in variance. (See the above figures.)

Note :
H PHASE is set in factory shipment by the most suitable value. But, there is the case that screen is missed as an upper figure occurs
by the signal format of other apparatus to be connected to.
A screen can be improved as the following by the readjustment. However, attention is necessory because in convenience may occur
when connected to another apparatus.

❺ CONVERGENCE ADJUSTMENT

1. Procedures

1. When replacing the DIGITAL CONV. Assy, replace the EEPROM of new DIGITAL CONV. Assy with the EEPROM of old DIGITAL CONV. Assy.
2. Check the initial data for the convergence adjustment.
3. Perform the coarse adjustment for the green to roughly correct distortion of the green.
4. Fine-adjust the green to eliminate any distortion. The green becomes the standard for the red and the blue.
   If necessary, repeat steps 3 and 4. Green adjustment is completed.
5. Perform the coarse adjustment for the red by roughly converging the red with the green.
6. Fine-adjust the red until the red is completely converging with the green.
   If necessary, repeat steps 5 and 6. Red adjustment is completed.
7. Perform the coarse adjustment for the blue by roughly converging the blue with the green.
8. Fine-adjust the blue until the blue is completely converging with the green.
   If necessary, repeat steps 7 and 8. Blue adjustment is completed.
9. Display the green, red, and blue colors at the same time to check the convergence. Readjust the convergence if necessary.

2. Prior to Adjustment

There are five screen modes, but convergence adjustment is required for only two modes. For adjustment, input the following video signal:

Table 1 Input signal

Screen Mode	Input Signal
1. FULL (FULL, 4:3 NORMAL) (ZOOM) (CINEMA WIDE) (NATURAL WIDE)	NTSC (480i) signal
2. HD (HD/DTV)	HD/DTV (1080i) signal

NTSC : Stable signal source, such as an SG or an LD/DVD player.
HD   : Stable signal source, such as an HD SG or a DTV tuner (SH-D09, etc.)

When CRTs are replaced or when the deflection yoke is moved, perform the deflection yoke adjustment, horizontal and vertical size adjustments, and centering magnet adjustments before the convergence adjustment.

3. Convergence Adjustment
3.1 Replacement of the EEPROMs Inside the DIGITAL CONV. Assy

IC1203: 24LC64(I)P
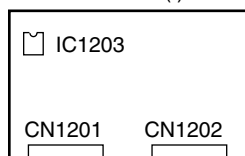
DIGITAL CONV. ASSY

The data stored in the EEPROMs are as follows:
IC1203
   OFFSET CONVER. MODE 1 (DFH, DFV)
   OFFSET CONVER. MODE 3
   Factory-preset values for convergence
   User-adjusted values for convergence (CENTER, MULTI-POINT)

IC1903 (VIDEO UCOM SERVICE Assy)
   OFFSET CONVER. MODE 1 (except DFH and DFV)
   OFFSET CONVER. MODE 2

3.2 Confirmation of Convergence Data

The convergence coarse adjustment modes change cyclically, as shown below, with each press of the INPUT4 key in FACTORY mode:

Convergence coarse adjustment

DOT key (pressed once)	: OFFSET CONVER. MODE 1
DOT key (pressed twice)	: OFFSET CONVER. MODE 2
DOT key (pressed three times)	: OFFSET CONVER. MODE 3

Cyclical change
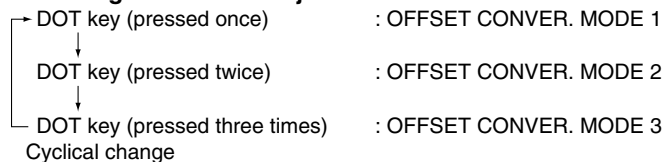
Check whether the data of MODE 1 and MODE 2 are as shown in Table 2.

The cross-hatch signal is generated inside the unit, and is automatically displayed in OFFSET CONVER. mode and MANUAL CONVERGENCE mode. You can turn on and off the cross-hatch signal with the YELLOW key.

Screen indication

Ⓐ
Screen mode:
F : FULL   H : HD
The Screen modes change cyclically with each press of the SCREEN mode key.
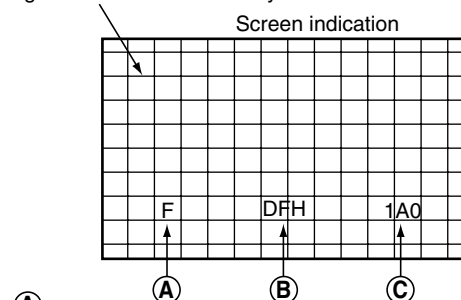
Ⓑ
Adjustment items can be selected with the numeric keys.
See Table 2.

Ⓒ
Adjustment data:
MAX   1FF
        100
        001
CNT ● 000
        3FF
        2FF
MIN   200

Data can be adjusted with the VOL+ and VOL- keys.

VIDEO UCOM SERVICE ASSY

IC1903
24LC32A(I)P
IC1906
PD5815

47.
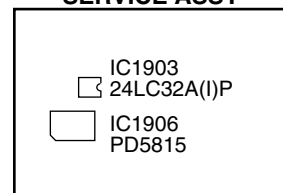
Table 2 OFFSET CONVER DATA

OFFSET CONVER MODE 1			
Numeric Key	Adjustment Item	Screen Mode	
		FULL	HD FULL
1	DFH	1A0	1A0
2	DFV	06A	06A
3	DF1	00F	00F
4	DF2	000	000
5	HPP	14C	14A
6	HPW	00B	00C
7	HTP	029	02C
8	VTP	034	009

OFFSET CONVER MODE 2			
Numeric Key	Adjustment Item	Screen Mode	
		FULL	HD FULL
1	V1D	022	012
2	V1C	020	01E
3	V10	000	000
4	VFP	003	03C
5	HFP	120	120
6	H1R	001	001
7	HCP	00F	00F
8	H10	01A	016

The above offset convergence values are common to the PRO-530HD, PRO-630HD and PRO-730HD.

If the offset convergence values are as indicated in Table 2, proceed to 3.3. If the values are not the same, adjust the values with the numeric keys and VOL +/– keys.

Example:
To check DFI in FULL mode of OFFSET CONVER. MODE 1
① Enter the FACTORY mode.
② Enter the OFFSET CONVER. MODE 1 by pressing the DOT key once.
③ Enter the FULL screen mode by pressing the SCREEN mode key once. (When the unit enters FACTORY mode, the screen mode automatically becomes FULL.)
④ Check the indication on the screen by pressing the numeric key 3.
　　Indication at the bottom of the screen : F DFI 00F
　　If the adjustment value is 00F, adjustment is not required.
　　If the adjustment value is other than 00F, adjust with the VOL + or VOL- key so that the value becomes 00F.

3.3 Coarse Adjustment of the Green

(Proceed with 3.3 and afterwards when the DIGITAL CONV. Assy is not replaced.)
Select adjustment items (STATIC and SIZE of vertical and horizontal lines, etc.) for each GH and GV, and adjust to roughly eliminate distortion. (For GV, peripheral pin distortion adjustment is necessary.)
Press the DOT key three times to enter OFFSET CONVER. MODE 3.
Press the SCREEN mode key and proceed with the adjustment for each screen mode.

The cross-hatch signal is generated inside the unit, and is automatically displayed in OFFSET CONVER. mode and MANUAL CONVERGENCE mode. You can turn on and off the cross-hatch signal with the YELLOW key.

Screen indication

Ⓐ

Screen mode:
F : FULL
H : HD

The Screen modes change cyclically with each press of the SCREEN mode key.

Ⓑ
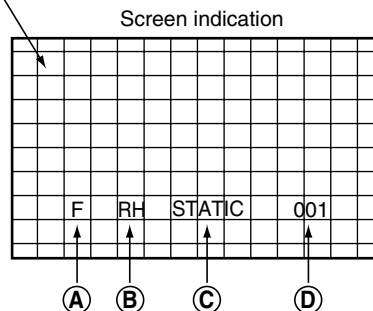
Cyclically changes with the CH+ or CH- key as follows:

RH ⟷ RV ⟷ BH

GV ⟷ GH ⟷ BV

Ⓒ
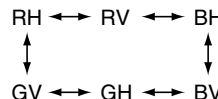
Adjustment items can be selected with the numeric keys.
See Table below.

• **Waveforms adjustable in the coarse adjustment of the green**

Numeric Key	GH	GV
0	STATIC	STATIC
1	SKEW	SKEW
4	KEY	KEY
6	PIN	PIN
7	LIN	LIN
8	SIZE	SIZE

Ⓓ

Adjustment data:

MAX	↑	1FF
		100
		001
CNT	●	000
		3FF
		2FF
MIN	↓	200

Data can be adjusted with the VOL+ and VOL- keys.

• Pattern for each adjustment item

GH

Key No. ⓪	Key No. ①	Key No. ④	Key No. ⑥
STATIC	SKEW	KEY	PIN

Key No. ⑦	Key No. ⑧
LIN	SIZE

▷———◁
▷- - - - -◁ = Fixed position

GV

Key No. ⓪	Key No. ①	Key No. ④	Key No. ⑥
STATIC	SKEW	KEY	PIN

Key No. ⑦	Key No. ⑧
LIN	SIZE
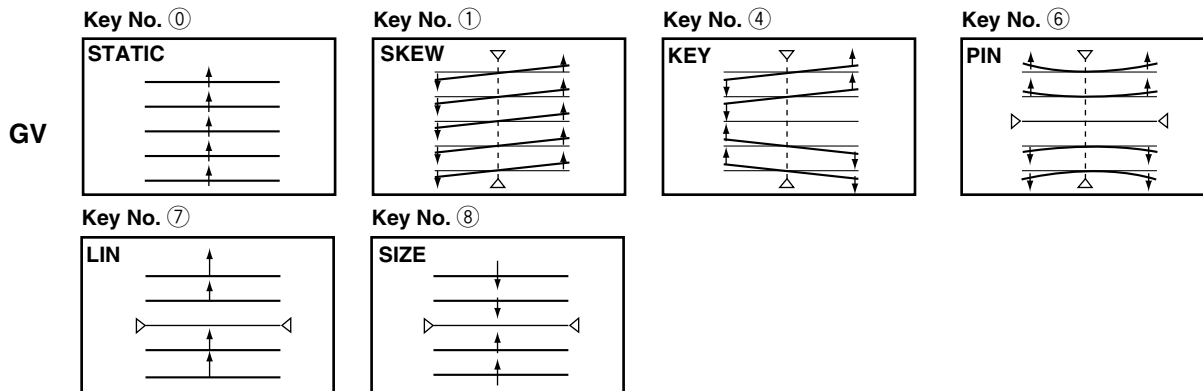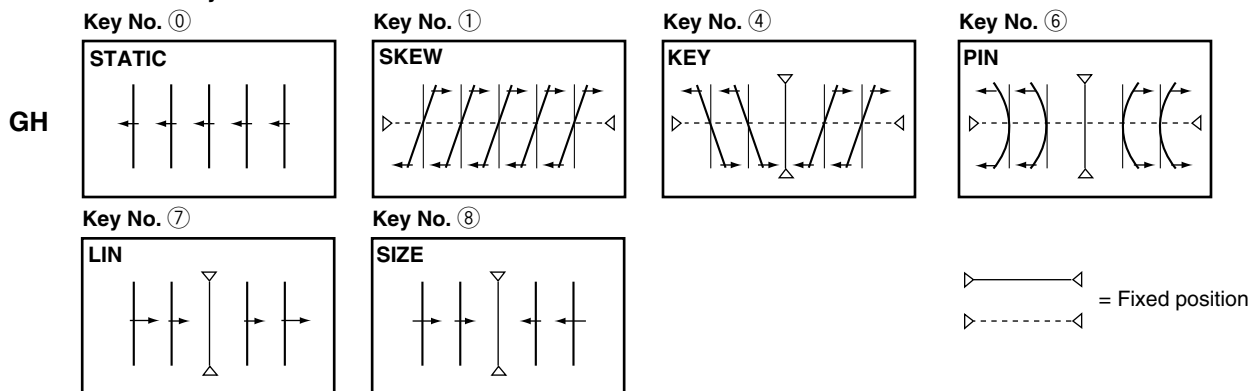
Note 1: When the Green CRT is replaced, or when the deflection yoke for the green is replaced, prior to the convergence adjustment, tune the center of the image to the center of the screen by turning the centering magnet.

Note 2: When the DEFLECTION SERVICE Assy or DIGITAL CONV. Assy is replaced, make coarse adjustment as shown in 3.3 above.

3.4 Fine-adjustment of the Green

Enter MANUAL CONVERGENCE mode by pressing the SET/ENTER key, and make adjustments. Repeatedly make the coarse adjustment as shown in 3.3 if necessary. Proceed with the adjustment for each screen mode. Adjusted values for the green become the standard for the red and the blue.

3.4.1

In MANUAL CONVERGENCE mode entered by pressing the SET/ENTER key, the display becomes as shown below:
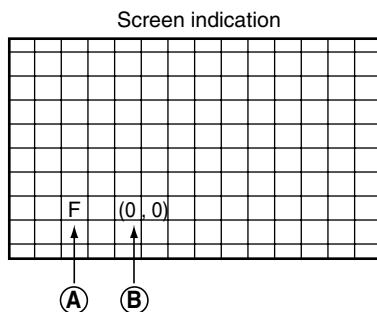
Screen indication

F (0, 0)

Ⓐ Ⓑ

Ⓐ

> **Screen mode:**
> F : FULL
> H : HD
>
> The Screen modes change cyclically with each press of the SCREEN mode key.

Ⓑ

> **Coordinates where the cursor (adjustment point) is located**
> There are 72 adjustment points (8,9) on the coordinates for FULL and HD modes,
> but the coordinates actually used for adjustment are as follows (the coordinates outside the ranges indicated below are outside the screen, and adjustment will not have any effect on the screen):
> FULL   : (0, 1) to (7, 9)
> HD   : (0, 1) to (7, 9)
> (X, Y): X=abscissa, Y=ordinate
> Some coordinates may be outside the screen and invisible.
> The point at coordinates (0, 0) is at the upper left of the screen.

3.4.2

Move the cursor to a point to be adjusted with the cursor move keys.

Screen indication

F (4, 4)
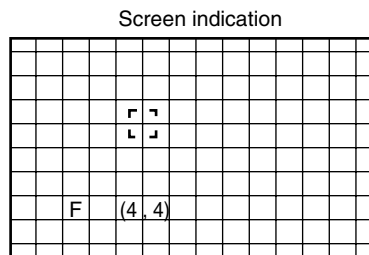
Note: The actual shape of the cursor is " [ ] ".
The position of the cursor in this figure is different from the actual position on the screen.

49.

3.4.3

Press the SET/ENTER key when the point to be adjusted is determined.

Screen indication

Ⓐ
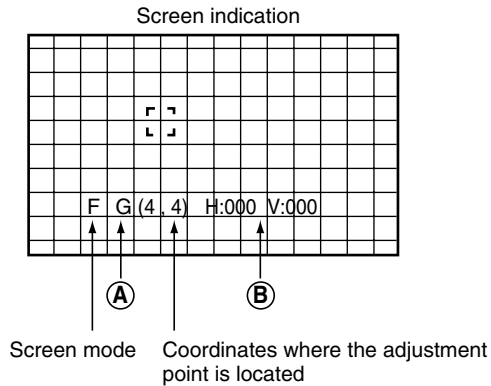
Color to be adjusted:
G: GREEN, R: RED, B: BLUE
To change colors, use the CH+ or CH- key.
The colors change cyclically as follows:
With CH+ : R → B → G → R
With CH- : R → G → B → R

Ⓑ

H : ∗∗∗ Adjustment data in the horizontal direction
V : ∗∗∗ Adjustment data in the vertical direction
　(∗∗∗= hexadecimal number)

Data　MAX　↑　1FF
　　　　　　　　100
　　　　　　　　001
　　　　CNT　●　000
　　　　　　　　3FF
　　　　　　　　2FF
　　　　MIN　↓　200

For adjustment, move the Line to the desired direction with the cursor keys.
　To move the Horizontal Line upward, press the " ▲ " key.
　(The value decreases.)
　To move the Horizontal Line downward, press the " ▼ " key.
　(The value increases.)
　To move the Vertical Line to the left, press the " ◄ " key.
　(The value decreases.)
　To move the Vertical Line to the right, press the " ► " key.
　(The value increases.)

• To select one color, use the RED key for the red, GREEN key for the green, BLUE key for the blue. Pressing this key toggles color muting on or off.
• To mute all the colors, press the DISPLAY key. To release muting, press the RED, GREEN or BLUE key.
• To erase the cross hatch, press the YELLOW key. Pressing this key toggles between display of the cross hatch screen and the input screen.
• To change the brightness of the input screen, use the VOL+ or VOL- key. The brightness increases with the VOL+ key (CONTRAST +10) and decreases with the VOL- key (CONTRAST -40). (The brightness can be changed only in Fine-adjustment mode. The brightness of the cross hatch screen cannot be changed.)

3.4.4

When adjustment of the selected point is finished, press the SET/ENTER key, then adjust the other adjustment points by repeating 3.4.1 to 3.4.4.

3.4.5

Make the adjustment for the green in each screen mode, and use the green as the standard screen for the red and the blue. To change screen modes, use the SCREEN mode key.

Note: Some coordinates for adjustment points are located outside the screen. Be sure not to make adjustments on those points, because adjustment of those coordinates will have little effect on the screen.

● **Adjustment Technique**

1st step

Adjust so that the vertical and horizontal lines forming a cross at the center of the screen become straight. Check also the screen size and the linearity of the horizontal and vertical lines.
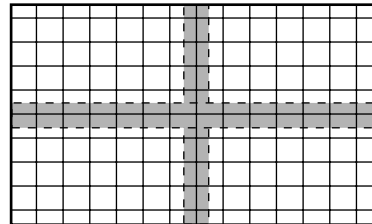
• See "3.3 Coarse adjustment of the green."
  Adjust GH STATIC, SKEW and SIZE, and GV STATIC, SKEW, PIN and SIZE to correct the screen location, tilt, screen information volume, and peripheral pin distortion.
• See "3.4 Fine-adjustment of the green."
  Fine-adjust the linearity of the vertical and horizontal lines forming a cross at the center of the screen.

Note: In principle, only the selected point is changed in MANUAL CONVER. mode. However, as the adjusted data (amount of adjustment) increase, peripheral points may be affected. So be sure not to greatly change the adjustment data of one point, but change peripheral points at the same time. See the examples below.

If an adjustment point is greatly moved to the right, | Peripheral points may be affected.
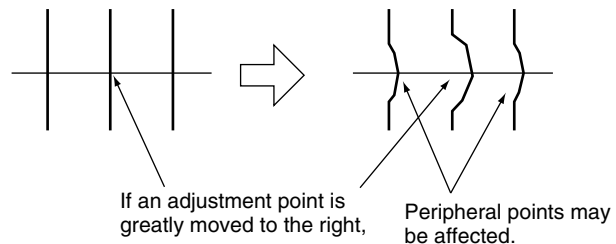
In a case of an error in convergence:

Adjustable points

Good adjustment:

5   20   2 ← Adjustment data

Bad adjustment:

-5   30   -3 ← Adjustment data
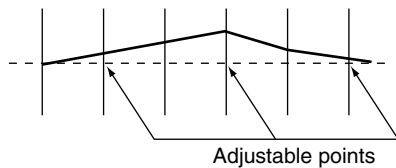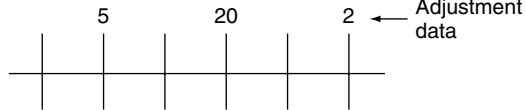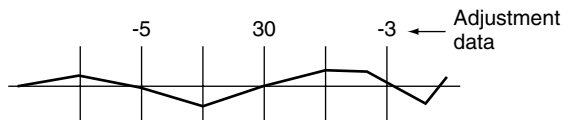
2nd step

Adjust so that the vertical lines become straight, taking care to preserve proper screen information volume and the linearity. Adjust the right half of the screen first, then the left half. (See 3.4.)
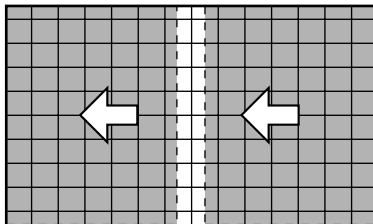
Right half : Adjust from the edge toward the center.
Left half : Adjust from the center toward the edge.

3rd step

Adjust so that the horizontal lines become straight. Adjust the upper half of the screen first, then the lower half. (See 3.4.)
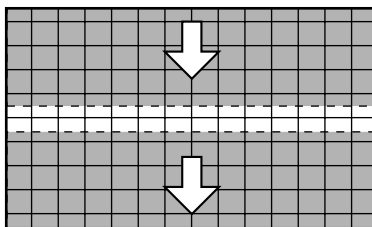
Upper half : Adjust from the edge toward the center.
Lower half : Adjust from the center toward the edge.

4th step

Repeat 2nd and 3rd steps to take total balance. Then the adjustment for the green is completed.
To return from the fine adjustment mode to the coarse adjustment mode, press the MENU key once, then the DOT key.

Note: When the MENU key is pressed to quit MANUAL CONVERGENCE mode, the display will be unstable for several seconds. This is because the adjustment data are being written to the EEPROMs, and is not a malfunction. Do not perform any operation (power on/off, or pressing keys on the remote control unit or on the main unit, etc.) during this period, because doing so may affect your adjustment data.

3.5 Coarse Adjustment of the Red

After the green adjustment is completed, quit MANUAL CONVERGENCE mode by pressing the MENU or MUTING key, then press the DOT key three times to enter OFFSET CONVER. MODE 3.
Select adjustment items for RH and RV, and roughly correct distortion to converge with the green. Adjustment is required for each screen mode

For adjustable items of the red and the blue, see the following table.

Numeric Key	RH	RV	BH	BV
0	STATIC	STATIC	STATIC	STATIC
1	SKEW	SKEW	SKEW	SKEW
4		KEY		KEY
5	SUBPIN		SUBPIN	
6		PIN		PIN
7	LIN	LIN	LIN	LIN
8	SIZE	SIZE	SIZE	SIZE

• Pattern for each adjustment item

RH
BH

Key No. ⓪
STATIC

Key No. ①
SKEW

Key No. ⑤
SUB PIN

Key No. ⑦
LIN

Key No. ⑧
SIZE

▷————◁ = Fixed position

▷- - - - - ◁

- -

RV
BV

Key No. ⓪
STATIC

Key No. ①
SKEW

Key No. ④
KEY

Key No. ⑥
PIN

Key No. ⑦
LIN

Key No. ⑧
SIZE
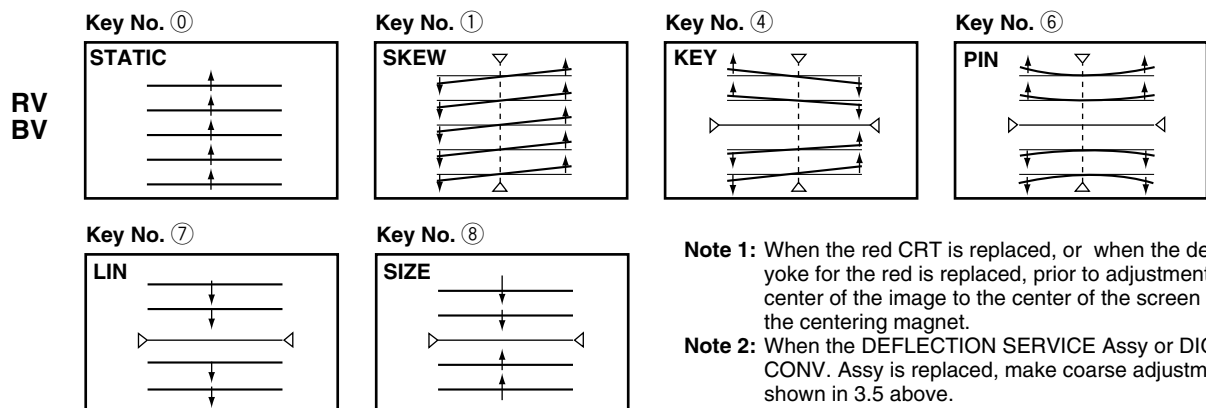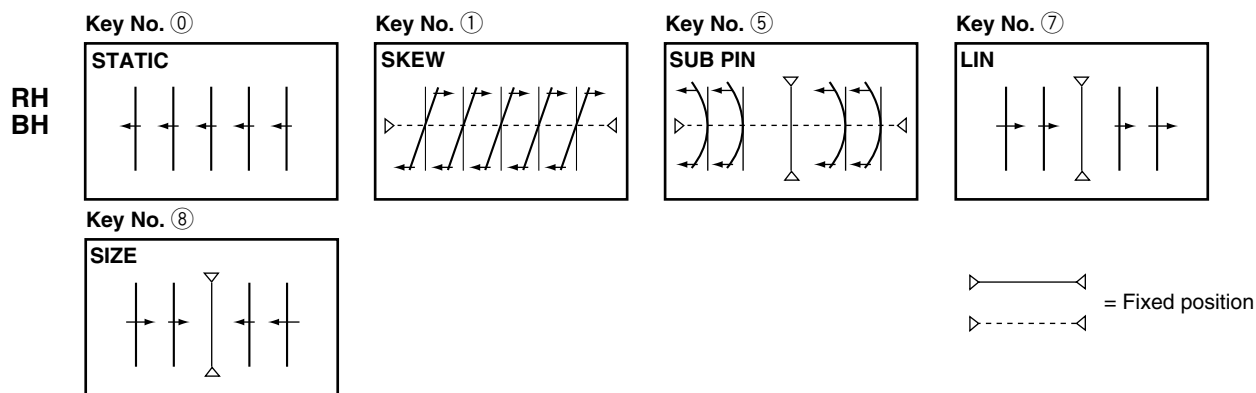
Note 1: When the red CRT is replaced, or when the deflection yoke for the red is replaced, prior to adjustment, tune the center of the image to the center of the screen by turning the centering magnet.
Note 2: When the DEFLECTION SERVICE Assy or DIGITAL CONV. Assy is replaced, make coarse adjustment as shown in 3.5 above.

3.6 Fine-adjustment of the Red
To fine-adjust the red, press the SET/ENTER key to enter MANUAL CONVERGEANCE mode. Repeat the coarse adjustment described in "3.5 Coarse Adjustment of the Red" if necessary. Make adjustment for each SCREEN mode, and eliminate distortion to converge with the green.

3.6.1
Press the SET/ENTER key to enter MANUAL CONVERGENCE mode, and make adjustment in the same manner as with the green. First, adjust the vertical and horizontal the red lines at the center of the screen so that they converge with the green center lines.
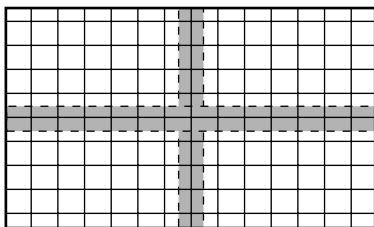
3.6.2
Adjust the red vertical lines so that they converge with the green vertical lines. Proceed to adjustment of the right half of the screen, then the left half. Adjustment should be done from the part where convergence is greatly dislocated.
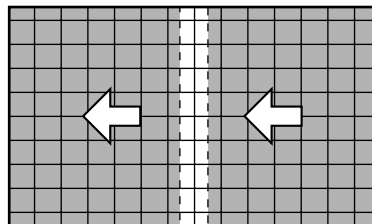
3.6.3
Adjust the red horizontal lines so that they converge with the green horizontal lines. Proceed to adjustment of the upper half of the screen, then the lower half. Adjustment should be done from the part where convergence is greatly dislocated.
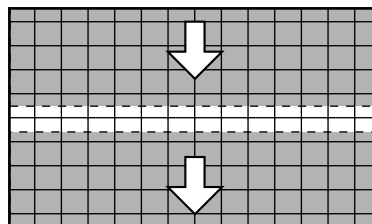
3.6.4
Repeat the adjustments described in 3.6.2 and 3.6.3 so that all the red vertical and horizontal lines converge with the green lines. (Completion of one screen mode)

3.6.5
Repeat procedures 3.6.2 through 3.6.4 for the other screen modes.
(Completion of the red adjustment)

3.7 Coarse Adjustment and Fine Adjustment of the Blue

Make coarse and fine-adjustments of the blue in the same manner as with the red, described in 3.5 and 3.6.

3.8 Confirmation of Adjustment

After the green, red, and blue adjustments are finished, check convergence errors with the patterns for all three colors on the monitor.
Check the patterns in all SCREEN modes, and if any error in convergence is recognized, readjust convergence in MANUAL CONVER. mode.

Note: Be sure NOT to change the green pattern during readjustment.

IMPORTANT!
(1) When all the adjustments are completed, or when adjustment should be temporarily interrupted, adjustment data must be written to the EEPROM, in the following manner:

When all the adjustments are completed, or to interrupt adjustment, press the MENU key to quit Convergence Adjustment mode. The display will be unstable for several seconds, but this is because the data are being written to the EEPROM. Wait without doing anything until the display becomes stable, which means writing of data to the EEPROM is finished.
If the power of the TV is turned off (standby) during Convergence Adjustment mode (coarse and fine-adjustments), turn on the TV, enter FACTORY mode, and enter Convergence Adjustment mode by pressing the SET/ENTER key. Then press the MENU key. The data will be written to the EEPROM as described above.

(2) Do NOT turn off the main power during or after convergence adjustment.
If you do so, the adjusted data may be lost. If the data are lost, you must make all the adjustments again.

(3) When the CENTER POINT (test cross) or MULTI-POINT (user convergence) adjustments have been made by a user, and if the unit enters FACTORY Convergence Adjustment mode (with the DOT and SET/ENTER keys), the user's adjustment data will be all cleared and returned to the factory-preset values.
Be sure NOT to enter this Convergence Adjustment mode except when a repair related to convergence or a repair that requires convergence adjustment later, is needed.
If you inadvertently enter Convergence Adjustment mode, readjust the convergence.

⑥ White Balance Adjustment

⑥-1 Contrast Adjustment

Start (1st FAC)

(DOWN)
▼ :STD OFFSET

+ :COMPONENT 33K
SUB CH

CH ENTER :PURE RGB

③

"Color Bar"

Adjust the screen to optimum condition.

At the TP-BK of the B CRT DRIVE Assy, check that the signal is shaped as shown below.

Saturated

Shapely waveform   Shapeless waveform
○   ✕

STD   OFFSET

CONTRAST

"Normal video signal"

After the STD adjustment is complete, adjust the 33K COMP and PURE RGB.

6 **-2** **White Balance Adjustment** This mode is to set the standard picture quality for a normal picture.

Start **1st FAC**

< Picture Quality >

ⓐ ⓑ

(DOWN)

STD

ⓐ ⓑ
COLOR -24

Telop: Blue   Data value

① ② ③
④
⑧ ⑨
⓪

① ⬇ : STD OFFSET

② + SUB CH : COMPONENT 33K

③ CH ENTER : PURE RGB

ⓑ < Data value >

+ VOL − or

① : COLOR (– 32 to 31)

② : TINT (– 32 to 31)

③ : CONTRAST (–128 to 127)

④ : BRIGHT (–128 to 127)

⑧ : DRV-R (–128 to 127)

⑨ : DRV-B (–128 to 127)

⓪ : CUT-R (–128 to 127)

+ CH : CUT-G (–128 to 127)

− : CUT-B (–128 to 127)

Adjust the DRV-R and DRV-B so that the bright part of the screen becomes white.

⑧ ⑨

⑧ : DRV-R
⑨ : DRV-B

Color bar signal without color signal.

Adjust the CUT-R and CUT-B so that the dark part of the screen becomes gray.
Do not move the screen VR.
Cut-G can be adjusted with little movement in STD OFFSET mode.

⓪ + CH − or

⓪ : CUT-R
− : CUT-B
+ : CUT-G

Note :
Refer to the following adjustment procedure.

After the STD adjustment is composite adjustment the 33k Component and PURE RGB.

54.

6 -3 Color/Tint Adjustment

Start | **1st FAC**

(DOWN)

▼ :STD OFFSET

+ :COMPONENT 33K
SUB CH

①
②

"Color Bar"

STD   OFFSET

TINT

Adjust ① COLOR and ② TINT so that the color-bar is set in the proper color saturation and the tint.

Do not adjust the PURE RGB.
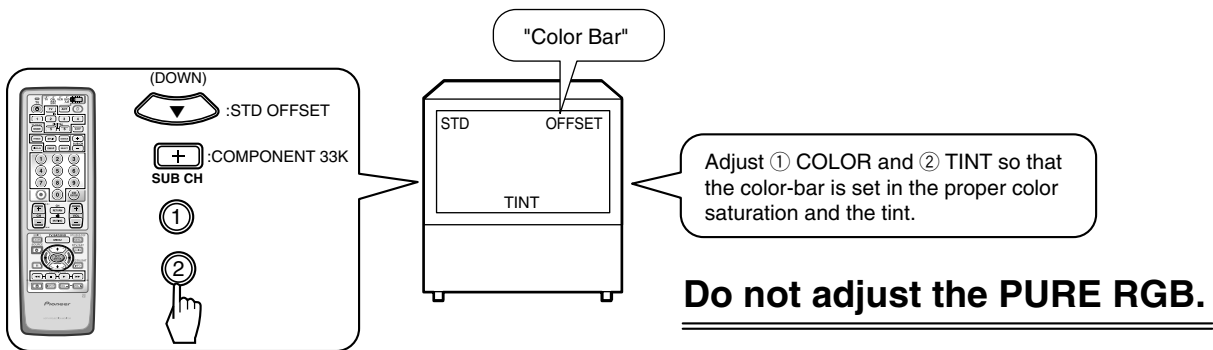
OFFSET DATA (VIDEO)

ADJ :Adjustment item
The numerical value is shipping a set value in the factory.

DIRECT KEY

OFFSET MODE

KEY	ADJ NAME	Adjustment
DOWN		
STD		
1	COLOR	ADJ
2	TINT	ADJ
3	CONTRAST	ADJ
4	BLACK LVL	ADJ
5	SHARPNESS	0
6	DETAIL	30
7	SVM	1
8	R DRV	ADJ
9	B DRV	ADJ
0	R CUT	ADJ
CH+	G CUT	ADJ
CH–	B CUT	ADJ

COMP (15kHz)

1	COLOR	0
2	TINT	0
3	CONTRAST	0
4	BLACK LVL	0
5	SHARPNESS	0
6	DETAIL	– 10
7	SVM	0
8	R DRV	0
9	B DRV	0
0	R CUT	0
CH+	G CUT	0
CH–	B CUT	0

DIRECT KEY

OFFSET MODE

KEY	ADJ NAME	Adjustment
COMP (31kHz)		
1	COLOR	0
2	TINT	0
3	CONTRAST	0
4	BLACK LVL	0
5	SHARPNESS	– 20
6	DETAIL	– 87
7	SVM	2
8	R DRV	0
9	B DRV	0
0	R CUT	0
CH+	G CUT	0
CH–	B CUT	0

Sub CH+, PinP CH+
COMP (33kHz)

1	COLOR	ADJ
2	TINT	ADJ
3	CONTRAST	ADJ
4	BLACK LVL	0
5	SHARPNESS	6
7	SVM	– 2
8	R DRV	ADJ
9	B DRV	ADJ
0	R CUT	ADJ
CH+	G CUT	ADJ
CH–	B CUT	ADJ

DIRECT KEY

OFFSET MODE

KEY	ADJ NAME	Adjustment	
COMP (45kHz)			
1	COLOR	ADJ	✳
2	TINT	ADJ	✳
3	CONTRAST	ADJ	✳
4	BLACK LVL	0	
5	SHARPNESS	6	
7	SVM	– 2	
8	R DRV	ADJ	✳
9	B DRV	ADJ	✳
0	R CUT	ADJ	✳
CH+	G CUT	ADJ	✳
CH–	B CUT	ADJ	✳

CH CENTER
PURE RGB

3	CONTRAST	ADJ
4	BLACK LVL	0
8	R DRV	ADJ
9	B DRV	ADJ
0	R CUT	ADJ
CH+	G CUT	ADJ
CH–	B CUT	ADJ

Note ✳ **:**
Check that the value is the same as that for COMP (33 kHz). If it is not, enter the same value as that for COMP (33 kHz).

DIRECT KEY

OFFSET MODE

KEY	ADJ NAME	Adjustment	
PURE RGB (DVI)			
3	CONTRAST	ADJ	＊
4	BLACK LVL	0	
8	R DRV	ADJ	＊
9	B DRV	ADJ	＊
0	R CUT	ADJ	＊
CH+	G CUT	ADJ	＊
CH−	B CUT	ADJ	＊
TV			
1	COLOR	− 5	
2	TINT	0	
3	CONTRAST	0	
4	BLACK LVL	0	
5	SHARPNESS	0	
6	DETAIL	− 20	
RTM			
1	COLOR	0	
2	TINT	− 2	
3	CONTRAST	− 22	
4	BLACK LVL	0	
5	SHARPNESS	0	
6	DETAIL	0	
8	R DRV	0	
9	B DRV	0	
0	R CUT	− 7	
CH+	G CUT	− 6	
CH−	B CUT	− 5	
GAME			
1	COLOR	0	
2	TINT	0	
3	CONTRAST	− 46	
4	BLACK LVL	0	
5	SHARPNESS	0	
6	DETAIL	0	
8	R DRV	− 3	
9	B DRV	− 11	
0	R CUT	− 5	
CH+	G CUT	− 6	
CH−	B CUT	− 2	
MODULE			
1	COLOR	0	
2	TINT	0	
3	CONTRAST	0	
4	BLACK LVL	0	
5	SHARPNESS	0	
6	DETAIL	0	
8	R DRV	0	
9	B DRV	0	
0	R CUT	0	
CH+	G CUT	0	
CH−	B CUT	0	

DIRECT KEY

OFFSET MODE

KEY	ADJ NAME	Adjustment
RGB → YCbCr (31k)		
1	COLOR	− 3
2	TINT	− 1
3	CONTRAST	0
4	BLACK LVL	0
5	SHARPNESS	0
6	DETAIL	0
7	SVM	0
8	R DRV	0
9	B DRV	0
0	R CUT	0
CH+	G CUT	0
CH−	B CUT	0
RGB → YCbCr (33k)		
1	COLOR	− 5
2	TINT	− 3
3	CONTRAST	0
4	BRIGHT	0
5	SHARPNESS	0
6	DETAIL	0
8	R DRV	0
9	B DRV	0
0	R CUT	0
CH+	G CUT	0
CH−	B CUT	0

Note ＊ :
Check that the value is the same as that for PURE RGB. If it is not, enter the same value as that for PURE RGB.

DIRECT KEY

OFFSET MODE

| KEY	ADJ NAME	Adjustment
NEWS COLOR TEMP		
3	CONTRAST	0
8	R DRV	− 15
9	B DRV	12
0	R CUT	0
CH+	G CUT	0
CH−	B CUT	− 1
LIVE COLOR TEMP		
3	CONTRAST	0
8	R DRV	− 2
9	B DRV	7
0	R CUT	0
CH+	G CUT	1
CH−	B CUT	0
SLEEP		
FILM COLOR TEMP		
3	CONTRAST	0
8	R DRV	8
9	B DRV	− 14
0	R CUT	− 1
CH+	G CUT	0
CH−	B CUT	1
B&W COLOR TEMP		
3	CONTRAST	0
8	R DRV	6
9	B DRV	− 9
0	R CUT	0
CH+	G CUT	0
CH−	B CUT	1
FILM FOR RTM COLOR TEMP		
3	CONTRAST	0
8	R DRV	3
9	B DRV	− 10
0	R CUT	0
CH+	G CUT	0
CH−	B CUT	0

ADJ :Adjustment item
The numerical value is shipping a set value in the factory.

56.

6 **-4** **ACL Adjustment** Perform this adjustment after the white balance adjustment by all means.

Start **1st FAC**


```
AUTO ACL ADJUST



START ?          ◯
```

Several seconds later

```
AUTO ACL ADJUST



END OK          ◯
```
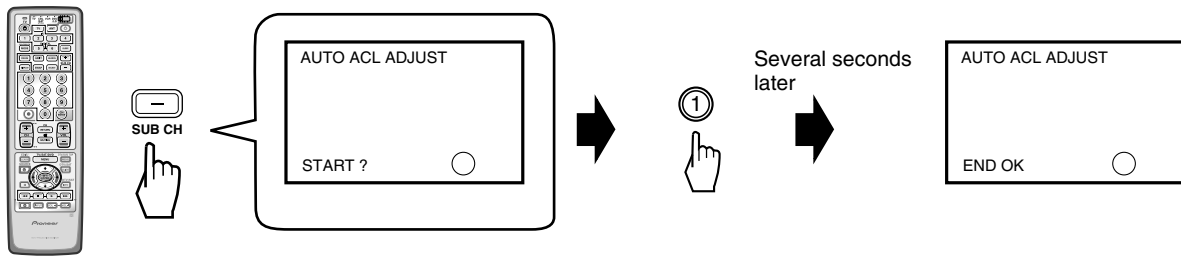
Signal:
• Input a cross hatch of composite signal into an INPUT4 connector.

Conditions:
• When there is the cross hatch of composite signal, be sure to adjust.
• When there is not a cross hatch of composite signal and replaces the EEPROM IC, this adjustment is unnecessary.
• When there is not a cross hatch of composite signal and does not replace the EEPROM IC, input a value of "45".
 (Method refers to the following.)
• When perform the above adjustment, and display "END NG", input a value of "45". (Method refers to the following.)

Start **1st FAC**


```
AUTO ACL ADJUST



START ?          ◯
                 Data value
```

< Data value >

VOL + or −

```
AUTO ACL ADJUST



EEPROM WRITE!    45
```

Data value: 45

57.
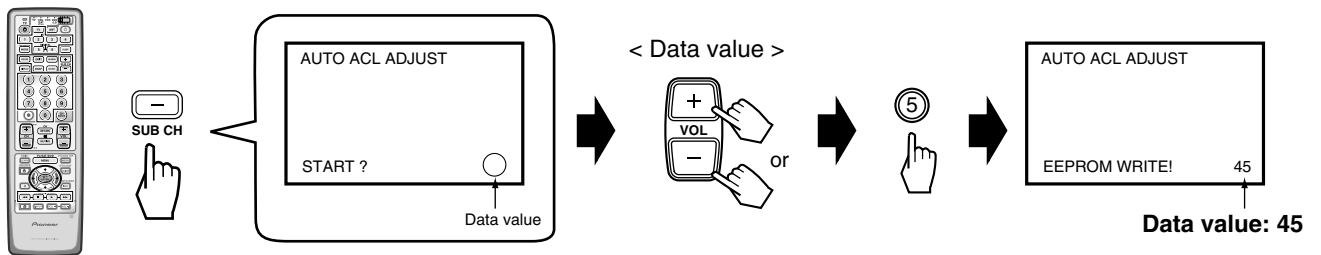
7 Panel Adjustment for 480i

Start | **1st FAC**

• Mode for adjusting the brightness, contrast of the gray part (panel) of the 4:3 normal screen.

CH
RETURN

ADJUSTMENT   PANEL

BRIGHT   −24

Telop : Yellow   Data value

<Data value section>

$+$
VOL
$−$
or

<Adjustment item section>
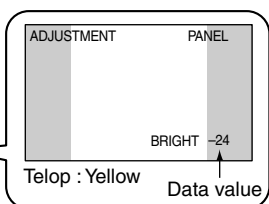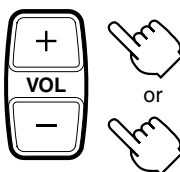
① ②

①: BRIGHT (− 128 to 127)

②: CONTRAST (− 128 to 127)

Procedures
① Send the black-burst signal to the INPUT 1 connector.
Enter Adjustment mode by following the procedures described above.
② With BRIGHT, adjust the gray part (panel) of the screen.
By observing TP5151 of the GREEN CRT DRIVE assembly with the oscilloscope, , adjust the brightness level which is low by 30V from Black level of the main screen.

31.7μS

210V   Main screen (black)

Approx. 30V   Panel part: The level of this part changes with the BRIGHT data.

GND

③ Switch the input signal to a 100%-white signal.
Adjust the panel part and the main screen with CONTRAST.
Observe the same site as described in Step ② above, and adjust the amplitude of the luminosity.

Adjust so that the level of the luminosity of the panel and that of the main screen become the same.

Approx. 0V

Main screen (white)

The level of the panel part changes with the CONTRAST data.
The level of the main screen heightens or lowers in the reverse direction.
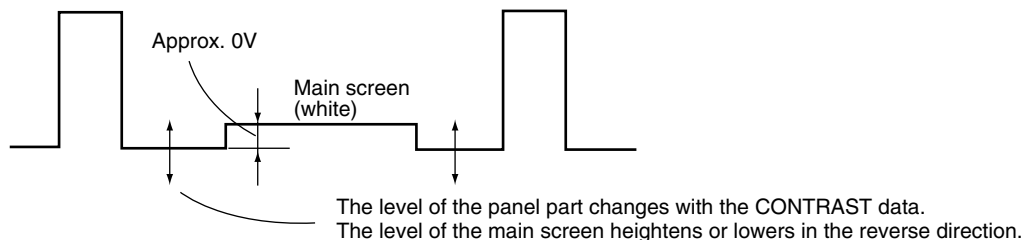
8 Panel Adjustment for 480P

Start (**1st FAC**)

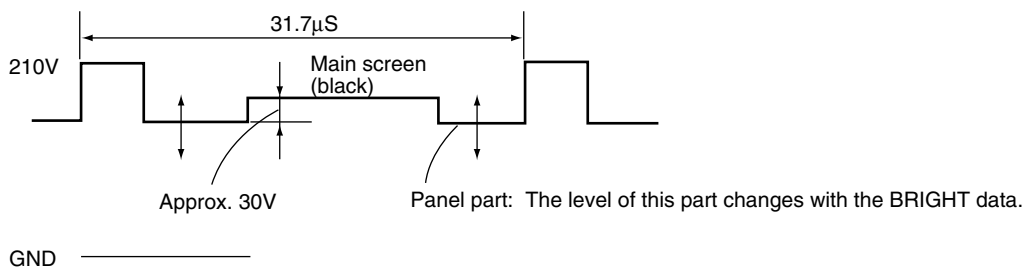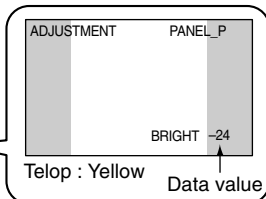• Mode for adjusting the brightness, contrast of the gray part (panel) of the 4:3 normal screen of 480P signal.

RIGHT
▶

ADJUSTMENT   PANEL_P

BRIGHT –24

Telop : Yellow   Data value

<Data value section>

+
VOL
–

or

<Adjustment item section>

(1) (2)
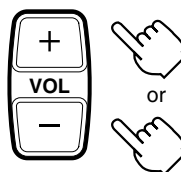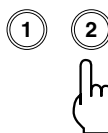
(1) : BRIGHT (– 128 to 127)

(2) : CONTRAST (– 128 to 127)

Note :
• The adjustment procedures are the same as those described in " ❼ Panel Adjustment for 480i " except for the following:
• Send the black burst of the 480P signal to the INPUT 1 connector.
• Send a 100%-white 480P signal to the INPUT 1 connector.
• When 480P signal is not obtained and adjustment does not complete, input a value the same as BRIGHT and the
  CONTRAST data value that adjusted with step ❼.

Power Down Troubleshooting

DIAGNOSIS METHOD

Various protection circuits are provided for this unit. When these protection circuits are activated, the power of the unit is shut down (P.D.: Power Down).
The defective parts can be easily diagnosed by observing the LEDs inside the POWER SUPPLY Assy.

  1. D107 in the AWV1960 (For POWER SUPPLY Assy)
  2. D111 in the AWV1960 (For DEFLECTION SERVICE Assy)

POWER SUPPLY ASSY   SIDE A

→ Front

RED P.S. ASSY PD — D107

RED DEF ASSY PD — D111

LED points

How to Diagnose a Failure

P.D.

Is D111 lit ? — Yes → to P.D. (2)
DEFLECTION SERVICE Assy

No

Is D107 lit ? — Yes → to P.D. (1)
POWER SUPPLY Assy

No

Confirm it whether it is P.D..

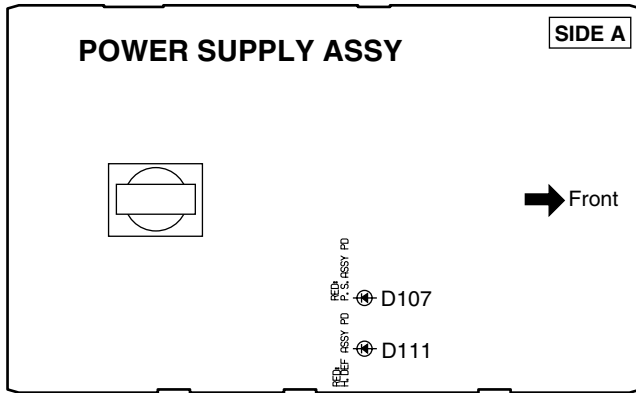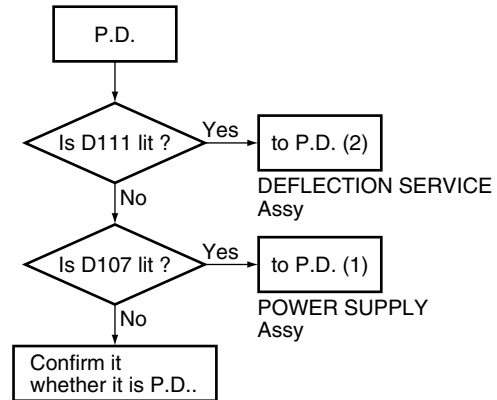**Note:** There is a case that DEFLECTION SERVICE Assy P.D. works when there is a damage with the POWER SUPPLY Assy.

Example)
If there is not 6V, V DRV+, V DRV- does not come out. And P.D. hangs with the DEFLECTION SERVICE Assy more first than the POWER SUPPLY Assy.

P.D. (1)

Failure in the POWER SUPPLY Assy.
There are two main possibilities:
  1. Blown fuse(s) in secondary
  2. Abnormality in AUDIO OUTPUT

Status	Causes	Check Items	Probable Defective Parts
D320 ANODE Hi	Blown fuse (s)	The voltage (approx. 14V) at D307 is not supplied.	VIDEO UCOM SERVICE Assy, DVI SERVICE Assy
		The voltage (29 to 38V) at R306 is not supplied.	IC1101 (POWER SUPPLY Assy)
		The voltage (approx. 6.5V) at "6V" JP is not supplied.	VIDEO UCOM SERVICE Assy, SIGNAL Assy, DVI SERVICE Assy
		The voltage (approx. 4.8V) at "4V" JP is not supplied.	
D1106 ANODE Hi	Abnormality in AUDIO OUTPUT	The SP line (CN1101) is disconnected.	Connect the SP line.
		The voltage at the negative electrode of the C1114 and C1117 is 5.5V or more.	C1114, C1117 (POWER SUPPLY Assy)

Note: The anode of the diode is high only for a short time after the power is turned on until the protection circuits are activated (P.D.)
     The LEDs are lit by the HOLD circuit.

In a case when the power cannot be on with no LED lit, check the following:
1. Check if the FU201 fuse in the POWER SUPPLY Assy is blown.
2. Disconnect and check connector P1 (CN407) to see whether STB 5 V is supplied.
   If STB 5 V is supplied, replace the VIDEO UCOM SERVICE Assy. If STB 5 V is NOT supplied, replace the POWER SUPPLY Assy.
3. Disconnect and check connector P2 (CN404) to see whether AC CLK is supplied.
   If AC CLK is supplied, replace the VIDEO UCOM SERVICE Assy. If AC CLK is NOT supplied, replace the POWER SUPPLY Assy.

When overload detection mechanism is activated, the 10V line is short-circuited. If the power switch is set to ON again in this condition, there may be a case where the power cannot be turned on, with just a whining sound, and where only the D107 LED in the POWER SUPPLY Assy is lit. If this happens, first replace only the VIDEO UCOM SERVICE Assy, disconnect the AC cord from the AC outlet or turn the main power switch OFF, and wait for five minutes. Then, turn on the power again. If the condition is ameliorated, only the VIDEO UCOM SERVICE Assy is defective. If the same symptom occurs, replace the POWER SUPPLY Assy. In the latter case, the VIDEO UCOM SERVICE Assy may not be defective.
SIGNAL and TUNER Assemblies can also perform the same as VIDEO UCOM SERVICE Assy.

P.D. (2)

Failure in the DEFLECTION SERVICE Assy.
There are six main possibilities:
  1. Blown fuse (s) in secondary
  2. Abnormality in the regulator of heater
  3. Overload detection
  4. H. deflection stopping detection
  5. X-ray protection
  6. V. deflection stopping

Status	Causes	Check Items	Probable Defective Parts
D1006 ANODE Hi	Blown fuse (s)	The voltage (approx. 23V) at R831 is not supplied.	IC401, IC402 (POWER SUPPLY Assy) IC802 (DEFLECTION SERVICE Assy)
		The voltage (approx. –23V) at R833 is not supplied.	
		The voltage (approx. 8V) at D1010 is not supplied.	IC1001, D1021
D1014 ANODE Hi	Abnormally in the regulator for the heater	The voltage of HT + (approx. 6.4V) at C1019 + side is too high (over 7.5V)	D1012, IC1001
D503 ANODE Hi	Overload detection	Check the parts to the right.	Q603 (short-circuited between D and S) Q511 (short-circuited between C and E) IC5101, IC5151, IC5201 (CRT DRIVE Assy) Short D605 (short-circuited)
D512 ANODE Hi	Stopping H. deflection	Is the connector of the deflection yoke plugged in ?	Plug in the connector.
		No HDRV signal at R557	IC4608 (VIDEO UCOM SERVICE Assy)
		No DH. BLK signal at D506 (Cathode)	Q508, Q511
D613 ANODE Hi	X-ray protection	No change in the ABL voltage (no DC change) at pin 10 of the CN1907 when a 100%-white signal is repeatedly connected and disconnected	D4614 (short-circuited) of the VIDEO UCOM SERVICE Assy
			T601 (FBT) rare short
D806 ANODE Hi	Stopping V. deflection	Abnormality in VDRV +, VDRV – waveform that is output from pin 2 and 6 of the CN1907 in the VIDEO UCOM SERVICE Assy	IC4608 (VIDEO UCOM SERVICE Assy)
		No waveform is output from pin 4 of the CN505	IC802

Note: The anode of the diode is high only for a short time after the power is turned on until the protection circuits are activated (P.D.)
The LEDs are lit by the HOLD circuit.

Note that the power may be shut down when the voltages AC120V, 5V6 and STB5V from the POWER SUPPLY Assy are not supplied because the DEFLECTION SERVICE Assy is powered by the POWER SUPPLY Assy.

When overload detection mechanism is activated, the 120 V line is short-circuited. If the power switch is set to ON again in this condition, there may be a case where the power cannot be turned on, with just a whining sound, and where only the D111 LED in the POWER SUPPLY Assy is lit. If this happens, disconnect the AC cord from the AC outlet or turn the main power switch OFF, and wait for five minutes.

Be sure to check the fuses in the DEFLECTION SERVICE Assy because one or more may be blown as a result of short-circuiting of the load circuit of the DEFLECTION SERVICE Assy.

If the FU1001 and FU1002 fuses are blown, see the following table:

Causes	Check Items	Probable Defective Parts
Loading of the CONVER. AMP	Check that waveform signals are output from pin 3 and pin 1 of the CN401, CN402 and CN403, and that the DC element is not added to the signals.	IC401, IC402 (POWER SUPPLY Assy)
CONVER. MUTING not activated	Check that the electric potential of pin 3 and pin 4 of IC401 and IC402 are at the same level when the power is turned on.	Q404, Q402 (POWER SUPPLY Assy)

Block Diagram of the Protection Circuit

POWER SUPPLY ASSY
(AWV1960)

POWER SW ASSY
(AWZ6713)

VIDEO UCOM SERVICE
ASSY (AWV1992)

62.

DEFLECTION SERVICE ASSY (AWV1967)
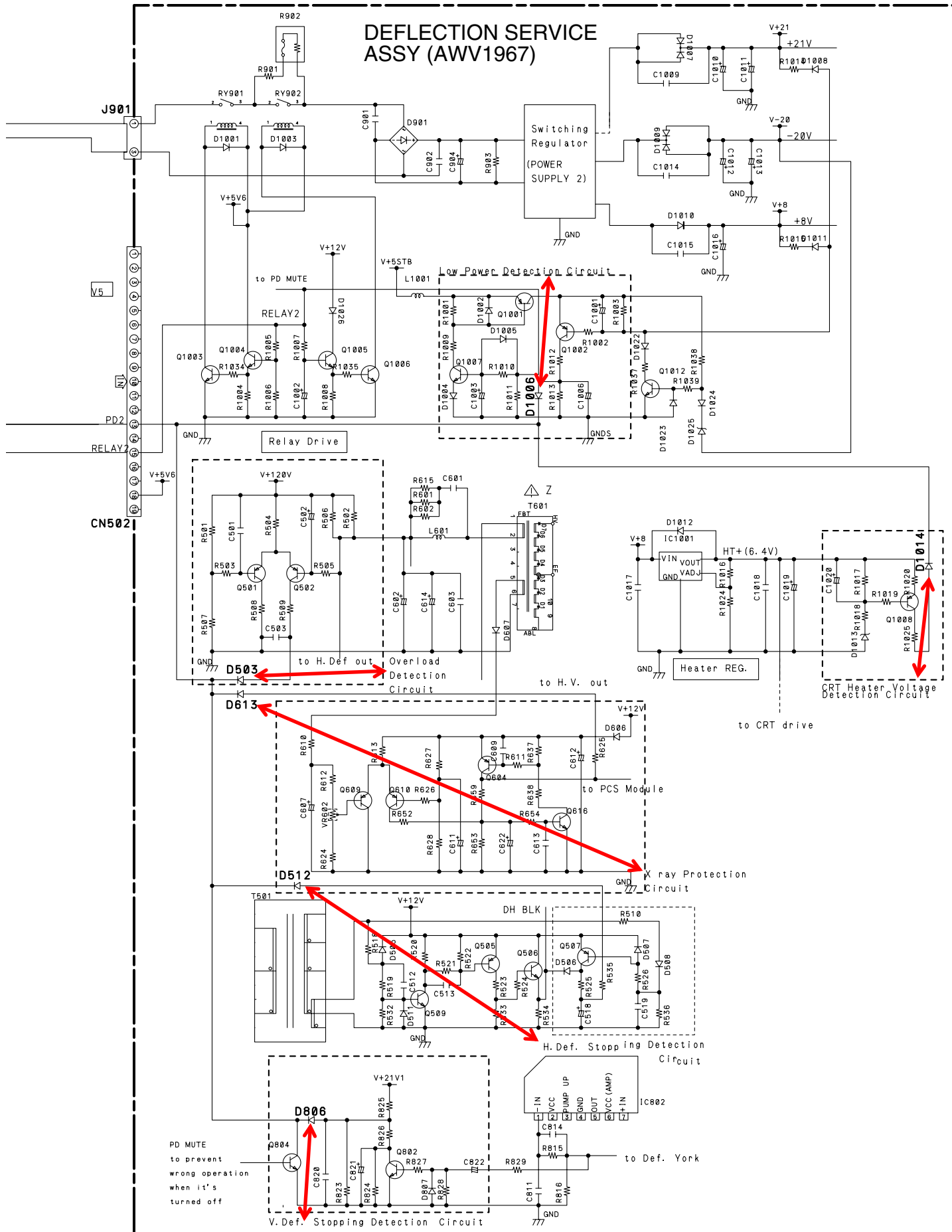
Specifications

Display and amplifier section

Reception system .... American TV standard NTSC system
Screen size .... 64" (PRO-730HD)
58" (PRO-630HD)
53" (PRO-530HD)
CRT .... 7" High focus CRT x 3
Brightness (White peak) .... 360 Foot-Lambert (PRO-730HD)
380 Foot-Lambert (PRO-630HD)
450 Foot-Lambert (PRO-530HD)
[White window signal input contrast Max.]
without protective screen
Horizontal resolution ...... More than 1400 lines (PRO-730HD)
More than 1250 lines (PRO-630HD)
More than 1150 lines (PRO-530HD)
[Input digital test pattern (1400 lines resolution)]
Input terminals .... 4 video inputs
4 S-VIDEO input jacks (Y/C separate INPUT)
2 COMPONENT VIDEO INPUT jacks (Y, P$_B$, P$_R$)
6 audio inputs
CENTER INPUT jack
Mini D-sub 15 pin INPUT jack (RGB)
BNC VIDEO INPUT jack
BNC COMPONENT VIDEO INPUT jack (Y, P$_B$, P$_R$)
2 DVI 25 pin INPUT jack (Digital)

NOTE:
*INPUT 1 video and component video input can be input to both
BNC and RCA type.*

Output terminals .... MONITOR/TV, AUDIO
Input terminal signal ratings
Input signal
Video signal:
Composite and S-VIDEO (Y): 1.0 Vp-p (75 ohms load)
COMPONENT (Y): 1.0 Vp-p (75 ohms load)
(P$_B$, P$_R$): 0.7 Vp-p (75 ohms load)
*Mini D-sub 15 pin (RGB): 0.7 Vp-p (75 ohms load)
*Digital signal: 3.3V T.M.D.S, 50 ohms
Audio signal (including CENTER): 400mV rms
Input impedance .... Video input: 75 ohms
Audio input (including CENTER): 22 kilo-ohms
or more
Input signal polarity (Video) .... Synchronized negative
Output terminal signal ratings
Output signal .... Video signal: 1 Vp-p (75 ohms load)
Audio signal: 500 mV rms (100 % modulation)
Output impedance .... Video output: 75 ohms
Audio output: Less than 1 kilo-ohms
Effective output
Front both channels driven .... 10 W + 10 W
Built-in speaker system .... 16 cm (6-5/16 in) full range x 2

* This jack cannot be used with a personal computer.

Tuner section

Circuit type .... Video signal detection:
PLL full synchronous detection
PLL digital synthesizer system
Audio multiplex: BTSC system
Reception channels .... VHF; CH2~CH13, UHF; CH14~CH69
CATV (STANDARD, IRC or HRC)
CATV 1-125 CH
Antenna terminals .... Antenna terminal, 75 ohms UNBAL,
F-type connector (VHF, UHF MIXED)

Electrical section, miscellaneous

Power requirements .... 120 V AC, 60 Hz
Power consumption
At time of shipment .... 250 W, 450 VA (CSA)
External dimensions
PRO-730HD .... 1510 (W) x 1425 (H) x 709 (D) mm
59-7/16 (W) x 56-1/8 (H) x 27-15/16 (D) inch
PRO-630HD .... 1378 (W) x 1351 (H) x 675 (D) mm
54-1/4 (W) x 53-3/16 (H) x 26-9/16 (D) inch
PRO-530HD .... 1268 (W) x 1289 (H) x 640 (D) mm
49-15/16 (W) x 50-3/4 (H) x 25-3/16 (D) inch

Weight of main unit
PRO-730HD .... 155 kg (341 lb 11 oz)
PRO-630HD .... 138 kg (304 lb 4 oz)
PRO-530HD .... 123 kg (271 lb 3 oz)

Wireless remote control unit

Operation system .... Infrared remote control system
Power source .... Two DURACELL ®"AA" MN1500 1.5 V
ALKALINE dry cell batteries
Dimensions .... 66 (W) x 226.5 (D) x 24.6 (H) mm
2-19/32 (W) x 8-29/32 (D) x 31/32 (H) inch
Weight .... 165 g (6 oz) (without batteries)

Accessories

Operating instructions 1
Warranty card 1
Remote control unit 1
DURACELL® "AA" MN1500 1.5V
Alkaline dry cell batteries 2
Side frame cover 2
Frame cover 2

NOTE:
*Specifications and design are subject to possible modifications
without notice due to improvements.*